

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF TEXAS
ABILENE DIVISION

GLOBAL HUNTER, LLC

PLAINTIFF,

v.

DES MOINES FLYING SERVICE, INC.,

DEFENDANT

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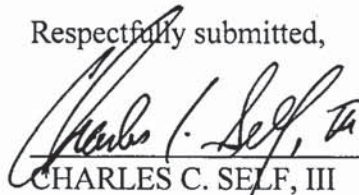
CIVIL ACTION NO. 1:18-CV-00062

**APPENDIX TO PLAINTIFF'S BRIEF IN SUPPORT OF ITS RESPONSE TO
DEFENDANT'S RENEWED MOTION FOR PARTIAL SUMMARY JUDGMENT**

Pursuant to LR 7.1(i) and LR 56.6 of the Local Civil Rules of the United States District Court for the Northern District of Texas, Plaintiff submit its Appendix which contains the following:

Exhibit	Title	App. Range
A	Affidavit of Scott Taliaferro, Jr.	Pp 3-43
B	Affidavit of Mark Reed	Pp 4-51
C	Excerpts of the Deposition of Leslie Ederer	Pp 52-103
D	Pratt & Whitney Canada Engine/Component Investigation Report	Pp 104-131

Respectfully submitted,



CHARLES C. SELF, III

State Bar No. 18007550

cself@whittenfirm.com

THE WHITTEN LAW FIRM, PC

500 Chestnut, Suite 1402

Abilene, Texas 79602

Tel: (325) 672-7824

Fax: (325) 672-2158

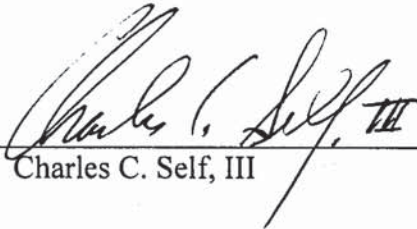
AND

s/ Billy W. Boone
Billy W. Boone
State Bar No. 02626600
LAW OFFICES OF BILLY W. BOONE
P. O. Box 2797
Abilene, Texas 79604
(325) 695-7460
(325) 677-0073 – FAX
mail@bboone.com

CERTIFICATE OF SERVICE

I hereby certify that on this 12th day of June, 2019, the above and foregoing was electronically filed with the Clerk of the Court by using the CM/ECF system which will send a notice of electronic filing as follows:

Don Swaim and Alex J. Whitman
Cunningham Swaim, LLP
7557 Rambler Road, Suite 400
Dallas, Texas 75231
dswain@cunninghamswaim.com
awhitman@cunninghamswaim.com



Charles C. Self, III

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF TEXAS

ABILENE DIVISION

GLOBAL HUNTER, LLC

PLAINTIFF,

v.

DES MOINES FLYING SERVICE, INC.,

DEFENDANT

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CIVIL ACTION NO. 1:18-CV-00062

AFFIDAVIT OF SCOTT TALIAFERRO, JR.

STATE OF TEXAS §

COUNTY OF TAYLOR §

BEFORE ME, the undersigned authority, on this day personally appeared SCOTT TALIAFERRO, JR., who being duly sworn upon his oath, deposed and stated as follows:

“My name is Scott Taliaferro, Jr. I am over the age of eighteen years, competent to make this affidavit, and have knowledge of the matters stated herein. The matters stated herein are true and correct.

“Global Hunter, LLC is a limited liability company organized and existing under the laws of the State of Delaware. Global Hunter, LLC is owned one hundred percent (100%) by Scott Oils, Inc.

“Scott Oils, Inc. is a corporation organized and existing under the laws of the State of Texas. Scott Oils, Inc. is owned one hundred percent (100%) by me.

“I am the president of Global Hunter, LLC.

“I am the president of Scott Oils, Inc.

"I am a licensed pilot having been licensed for the past 49 years.

"In early 2013, I notice that an airplane was for sale which I wanted Global Hunter, LLC to acquire. The airplane was listed for sale in "The Controller". The airplane was located, or based, in Pierre, South Dakota.

"After initial investigation of the airplane I, on behalf of Global Hunter, LLC dispatched Mark Reed of Abilene Aero, to travel to South Dakota to investigate and inspect the plane. Mr. Reed is the Director of Maintenance of Abilene Aero, and was during 2013. Abilene Aero is where I, individually and/or through entities I have owned or controlled, have based all airplanes that I have owned, either individually or through entities owned or controlled by me. I am familiar with the quality of work performed, and serviced proved, by Abilene Aero in general, and Mr. Reed in particular, and wanted his opinion of the condition of the airplane prior to purchase.

"Mr. Reed traveled to South Dakota to review the airplanes records and to observe the annual inspection then being done on the airplane. While there, Mr. Reed was able to observe the annual inspection of the plane and also review the engine logbook and airframe logbook.

"I was also allowed to review the engine logbook and airframe logbook. These logbooks indicated to me that the required maintenance for the airplane was up-to-date, all required annual inspections had been performed, and all service bulletins had been addressed.

"Based upon Mr. Reed's review and recommendation, along with my review of the engine logbook and airframe logbook, Global Hunter, LLC purchased the airplane on March 3, 2013 for the sum of \$890,000.00. At the time of the purchase of the airplane, the total accumulated flight time was 935 hours.

“After purchasing the airplane, Global Hunter had installed approximately \$150,000.00 worth of avionics on or in the airplane. This was done to enhance the avionics of the airplane. This also greatly increased the value of the airplane.

“After purchasing the airplane, I, on behalf of Global Hunter, LLC operated the airplane and was the only pilot to fly the airplane. From the time the airplane was purchased through the day of the accident, the metal chip detector never went off in this airplane.

“Prior to April 28, 2016, the airplane had three (3) annual inspections. Those occurred in 2013, 2015 and the last one, January 2016. Each of the annual inspections were performed by Abilene Aero. In fact, all maintenance on the airplane was performed by Abilene Aero except for the replacement of a tire and the replacement of an electrical circuit. The necessity of these two procedures occurred at location away from Abilene Aero, and were handled by maintenance facilities where the airplane was located at the time of the issue. All required annual inspections of the airplane were performed, and any required and/or suggested maintenance was performed during the time Global Hunter, LLC was the owner of the airplane. I am not an Aircraft Maintenance Technician. I have not performed any work on this airplane.

“On April 28, 2016 I was piloting the airplane on a trip from Abilene, Texas to Dallas Love Field. In the aircraft were two (2) employees of Scott Oils, Inc., Doug Cronk and Nick Tebet. Mr. Tebet is my stepson.

“After operating the aircraft for approximately one hour, the aircraft was cleared in to the Class “B” airspace and instructed to cross the Ranger VOR, and proceed west to east at 3500 feet, the engine of the aircraft failed. Immediately prior to the failure, I had noticed that the oil pressure and temperature of the aircraft, although well within the normal operating range, were both slightly elevated. In fact, I took a picture of the gauges to record the oil pressure reading

and temperature reading so that I could later discuss this with Mr. Reed, the mechanic who performed all work on the aircraft on behalf of Abilene Aero, Inc.

“After turning east on a heading of 090 degrees, at Ranger VOR, the engine experienced a catastrophic failure. I immediately established a best glide speed of 103 knots, turned the fuel pump from auto to off and also turned the ignition from auto to off. At the same time, I pulled the master fuel cutoff handle. I also left the battery switch on as well as the avionics master switch.. This allowed me to lower the landing gear and flaps since the hydraulic system for lowering the landing gear and flaps is electrically driven. This also allowed me to maintain the communication radio of the aircraft. I was able to talk to the controllers at the DFW International Airport located West of Dallas Love Field. I informed them that I had experienced an engine failure and was going to land the aircraft at DFW International Airport.

I was able to successfully glide to and land the aircraft on runway 13 Right at DFW International Airport, maintaining enough speed to exit the runway using the high-speed exit ramp.

“Upon landing, and after interviews with DFW International Airport first responders, the aircraft was towed to the General Aviation ramp at DFW International Airport.

“Later that day, I was contacted by Pratt & Whitney, the manufacturer of the aircraft engine. Pratt & Whitney sought permission to inspect the engine and I, on behalf of Global Hunter, LLC gave permission to Pratt & Whitney to inspect the engine.

“The aircraft was eventually moved to a private hangar on the west side of the Dallas Fort Worth International Airport. Pratt & Whitney personnel came and inspected the engine on or about April 29, 2016. After the initial inspection by Pratt & Whitney personnel, the engine was removed and eventually, after arrangements were made, Global Hunter was provided a loaner

engine, at a rental cost to Global Hunter, LLC. On June 16, 2016, the rental engine was installed. The failed engine had previously been shipped to Pratt & Whitney, Canada for their inspection and review.

“Pratt & Whitney, Canada issued its inspection report on or about June 15, 2016. The inspection report issued by Pratt & Whitney, Canada found that in March of 2006, the accessory gear box (AGB) was removed by Des Moines Flying Service and forwarded to Pratt & Whitney’s location in Orlando, Florida. This was in response to SB3426, a service bulletin issued by Pratt & Whitney, Canada. This service bulletin called for the removal of the accessory gearbox for modifications to be provided to the accessory gearbox. After the modifications were completed, the accessory gearbox was returned to Des Moines Flying Service and Des Moines Flying Service re-installed the accessory gearbox, and signed off on the repair/modification of the accessory gearbox. This is noted in the engine logbook of the aircraft, which both I and Mr. Reed reviewed and relied upon prior to the purchase of the airplane by Global Hunter, LLC.

“In contemplating the purchase of the aircraft, I relied upon the engine log and airframe log of the aircraft in making the decision on behalf of Global Hunter, LLC for the purchase of the aircraft. These records become a part of the aircraft, are required to be kept at all times with the aircraft, and are relied upon by buyers, sellers and most importantly, operators of the aircraft. As set forth above, I noted that the work performed on the plane in 2006, specifically the accessory gear box, was performed by Des Moines Flying Service.

“Pratt & Whitney did provide to Global Hunter, LLC a rental engine. Global Hunter and/or Global Hunter’s owner, Scott Oils, Inc. paid \$16,702.96 for the rental of this engine for a number of months. Eventually, the engine was purchased from Pratt & Whitney Canada for the

amount of \$375,000.00. The original engine was completely destroyed on April 28, 2016, requiring a replacement.

“As set forth above, the engine was removed from the aircraft and shipped to Pratt & Whitney Canada for their inspection. The removal and installation of the replacement engine was performed by Abilene Aero and was paid for by Global Hunter, LLC and/or Scott Oils, Inc., on behalf of Global Hunter, LLC. The charge for such removal and installation of the replacement engine was \$22,187.38. In addition, shipping costs to have the engine shipped from DFW International Airport to Montreal, Canada came to \$2,000.00. The shipping was performed by Federal Express, and paid by or on behalf of Global Hunter, LLC.

“Immediately after the engine failure, and before a replacement engine could be obtained and installed, the aircraft had to be stored at Dallas Fort Worth International Airport. I, on behalf of Global Hunter, LLC made arrangements to have the aircraft stored with Ameriflight. Storage costs for same came to \$2,280.00. These charges were paid by or on behalf of Global Hunter, LLC.

“In addition to the monies that have been expended by Global Hunter, LLC to remove the failed engine and replace it with a loaner engine, the eventual purchase of the replacement engine, the rental costs paid prior to the purchase of the replacement engine, and the storage fees, all of which are set forth above, this engine failure caused Global Hunter, LLC to lose out on a sale of the airplane. Global Hunter, LLC had entered in an agreement with Hairy Dog, LLC to sell the airplane. This agreement was entered into to sell the aircraft for the price of \$957,500.00. This agreement was unable to be consummated due to the fact that the engine had failed and only a rental engine was available in the plane. Global Hunter eventually sold the plane to Key

Aviation Group for the price of \$915,000.00. As such, this engine failure and resulting delay resulted in a loss to Global Hunter, LLC in the amount of \$42,000.00.

In support of this Affidavit, I am attaching the following documents, which have been referenced above:

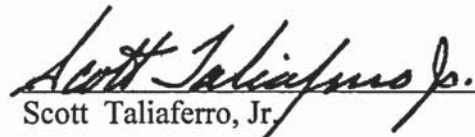
- Exhibit A): Pratt & Whitney Canada Leasing Pro-Forma Invoice dated September 13, 2018 addressed to Global Hunter, LLC. This is the invoice for the purchase of the replacement engine referenced above, and indicates a purchase price of \$375,000.00 United States Dollars. This amount was paid by or on behalf of Global Hunter, LLC to Pratt and Whitney Canada Leasing;
- Exhibit B): Abilene Aero Shop order #16-14015 addressed to Scott Oils, Inc. dated May 16, 2016. This bill is for the removal of the failed engine and the installation of the replacement engine. The total amount of the cost of these services was \$22,187.38, an amount which was paid by Scott Oils, Inc. on behalf of Global Hunter, LLC;
- Exhibit C): Scott Oils, Inc. Ledger Listing indicating Scott Oils, Inc. paid on behalf of Global Hunter, LLC, the sum of two thousand, two hundred eighty dollars (\$2,280.00) as a storage fee to Ameriflight to store the airplane from the time of engine failure until the replacement engine was installed;
- Exhibit D): Aircraft Sales Agreement dated October 24, 2016 by and between Global Hunter, LLC (as Seller) and Hairy Dog, LLC (as Buyer) for the sale of the 2003 Piper Meridian N54199 for the sum of \$957,000.00. As set forth above, this contract was eventually cancelled, and the Buyer's deposit returned, because the only engine available was, at the time the rental engine. The date of the termination of the contract was January 1, 2017;
- Exhibit E): Aircraft Sales Agreement dated September 27, 2018 by and between Global Hunter, LLC (as Seller) and Key Aviation Group, LLC (as Buyer) for the sale of the 2003 Piper Meridian N54199 for the sum of \$915,000.00. The contract was completed, resulting in a loss for Global Hunter, LLC in the amount of \$42,000.00, the difference in the sales price of the Hairy Dog, LLC contract and the Key Aviation Group, LLC contract;
- Exhibit F): Scott Oils, Inc. Ledger Listing indicating that Scott Oils, Inc. paid to Pratt & Whitney Canada Leasing on behalf of Global Hunter, LLC the sum of \$16,702.96 as payment for the rental of the airplane engine from the time of installation to the time of purchase;

Exhibit G): Scott Oils, Inc. Ledger Listing indicating the amount of money paid by Scott Oils, Inc. on behalf of Global Hunter, LLC to the Whitten Law Firm, which total approximately \$31,775.06 through May 22, 2019; and

Exhibit H): Copies of various charges related to discovery activities in this lawsuit, which are expenses incurred by Global Hunter, LLC related to this matter.

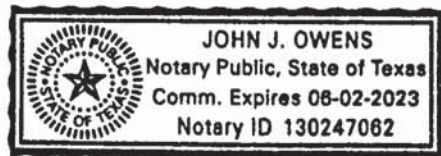
"Global Hunter, LLC has incurred damages in excess of \$490,000.00, including costs, related solely to the engine failure in the airplane.

FURTHER AFFIANT SAYETH NOT.



Scott Taliaferro, Jr.

4th SWORN TO AND SUBSCRIBED BEFORE ME, the undersigned authority, on this the day of June, 2019, Scott L. Taliaferro, Jr., to certify which witness my hand and seal of office.





Notary Public, State of Texas

Exhibit A


Pratt & Whitney Canada Leasing

A United Technologies Company

 Location Pratt & Whitney Canada, s.a.c.
 Pratt & Whitney Canada Leasing,
 Limited Partnership
 1000, Boul. Marie-Victorin
 Longueuil, QC, Canada
 J4G 1A1

Pro-Forma Invoice

"ORIGINAL"

 Page 1 Of 2
 No. 96481023
 Date 2018.09.13
 VAT ID DE274054464

PWC 13027 (2013-12)

Invoice to Global Hunter LLC Ste 105 3511 Silverside WILMINGTON DE 19810-4902 USA	Sold to Global Hunter LLC Ste 105 3511 Silverside WILMINGTON DE 19810-4902 USA
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Customer Information P.O. Number RM0007 P.O. Date 2018-09-12 Sales Order Number 68003663 Order Type Pro-Forma Order Date 2018-09-13 Delivery No Term of Payment Cash Before Shipment Eng. Model - SN PT6A-42A-RM0007 Core S/N N/A	Shipment Shipped to Global Hunter LLC Ste 105 3511 Silverside WILMINGTON DE 19810-4902 USA Customer No. 90531 Shipment Terms P&WC Longueuil Forwarding agent Date Shipped
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Payment Methods		INTL
US \$ Wire Transfers		
Payable To Pratt & Whitney Canada	Pay To Bank of Montreal 129 St-Jacques, Montreal, Quebec H2Y 1L6 Swift Code:BOFMCAM2	
Cheque Payment Pratt & Whitney Canada Corp. att: Treasury (01BO5) 1000, Marie-Victorin Longueuil, Quebec, Canada J4G 1A1	For Acct Bank of Montreal 279 St-Charles Ouest, Longueuil, Quebec J4H 1E4 Account: 01434600007 If required: Intermediary Bank: Wells Fargo Bank NA New York 10001 Swift Code: PNBPU3NNYC FEDWIRE ABA: 026005092 or CHIPS ABA: 0509	
	Beneficiary Pratt & Whitney Canada Corp.	

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Pratt & Whitney Canada Leasing

A United Technologies Company

Location Pratt & Whitney Canada, s.a.c.
Pratt & Whitney Canada Leasing,
Limited Partnership
1000, Boul. Marie-Victorin
Longueuil, QC, Canada
J4G 1A1

Pro-Forma Invoice

"ORIGINAL"

Page 2 Of 2
No. 96481023
Date 2018.09.13
VAT ID DE274054464

PWC 13027 (2013-12)

Information					
Details					
Item	Material No. / Desc	Ctry. of Org.	Unit price	Invoice Qty	Amount
000001	BS1011	CA	375,000.00 USD	1 EA	375,000.00
Subtotal					375,000.00
Total Payable in US Funds					375,000.00

J 2018-09-13 12:37:10 R3 PW43973 PR1 400 /opt/uniq/queue/tmp/speedy0404171218B

End-of-document

Exhibit B

ABILENE AERO

2850 Airport Blvd.
 Abilene Tx. 79602
 Phone 325-677-2601
 Fax 325-671-8018
 Federal ID # 75-1307734

Shop Order: 16-14015

Opened: 5/16/2016

Closed: 6/30/2016

Sold To: Scott Oils, Inc.
 P O Box 240
 Abilene, TX 79604

Aircraft Number:		N54199		Type:PA46-500TP		S/N: 4697164							
Total Time:		1,241.0		Hobbs Time:		1,241.0		Tach Time:		LG Cycles:		1,000	
<u>Eng#</u>	<u>Type</u>	<u>S/N</u>		<u>Time</u>	<u>Cycles</u>	<u>Prop Type</u>		<u>Prop S/N</u>		<u>Prop Time</u>			
1	PT6A-42	PCERM0175		1,241.0	1,140	HC-E4N-3Q		HH1724		232.1			
<u>Aircraft Comments:</u>													
Log books in sales office 5-16													

Discrepancy: 1**Problem:**

Aircraft at DFW with unservicable engine

NOTE: flat fee for travel expenses

Action Taken:

Traveled to DFW with tools and equipment removed engine S/N PCERM0175 and brought to ABI.

Charges This Item:	27.61 Hours @	95.00	\$	2,622.95
	Flat-Fee Labor:			\$ 600.00
	Total For This Discrepancy:			\$ 3,222.95

Discrepancy: 2**Problem:**

Inspect engine and prepair for shipping

Action Taken:

Inspected engine accessory gear box has one gear unserviceable and metal contamination. Packed and shipped to PWC canada.

Charges This Item:	6.32 Hours @	95.00	\$	600.40
	Total For This Discrepancy:			\$ 600.40

Discrepancy: 3**Problem:**

Install loaner engine.

NOTE: flat fee for travel expenses

Action Taken:

Traveled from ABI to DFW installed loaner engine PT6A-42A S/N PCE-RM0007 with a new igniter box P/N 10-381550-4 and beta arm P/N 3106475-01, serviced with 12 quarts 2380 trubine oil, Ground run ops and leak check ok. Test flight ok. Returned to ABI from DFW.

Charges This Item:	41.61 Hours @	95.00	\$	3,952.95
	Flat-Fee Labor:			\$ 1,000.00
	Miscellaneous:			\$ 15.00

Part Number	Description	Credit	Quantity	Units	List Price	Disc	Unit Price	Extended
54026-000	Gasket		1.00	Each	18.910		18.910	\$ 18.91
	Freight		1.00				75.750	\$ 75.75

Printed: 7/27/2016

Shop Order: 16-14015

Page: 1 of 3

2850 Airport Blvd.
Abilene Tx. 79602
Phone 325-677-2601
Fax 325-671-8018
Federal ID # 75-1307734

2380 EXXON	AVIATION OIL TURBINE*		12.00	Each	30.280		30.280	\$	363.36
MS9134-01	GASKET		1.00	Each	17.400		17.400	\$	17.40
MS9135-01	GASKET		1.00	Each	5.800		5.800	\$	5.80
MS21042L08	NUT		9.00	Each	0.720		0.720	\$	6.48
AN960-10L	WASHER*		5.00	Each	0.060		0.060	\$	0.30
AN960-6L	WASHER		9.00	.08	0.060		0.060	\$	0.54
MS21042L3	NUT		5.00	Each	0.720		0.720	\$	3.60
AN960-8	WASHER		1.00	Each	0.030		0.030	\$	0.03
MS9388-213	ORING		2.00	Each	1.950		1.950	\$	3.90
AN900-10	CRUSH GASKET		1.00	Each	1.600		1.600	\$	1.60
MS9388-212	O-RING		2.00	Each	2.700		2.700	\$	5.40
MS29513-012	ORING		2.00	Each	1.000		1.000	\$	2.00
MS29513-116	ORING		1.00	Each	0.270		0.270	\$	0.27
MS21919DG-19	CLAMP/ADEL		3.00	Each	2.150		2.150	\$	6.45
AN3-23A	BOLT		1.00	Each	0.530		0.530	\$	0.53
CLA-709	Contact Cleaner		3.00	Each	14.800		14.800	\$	44.40
A3235-020-935	WASHER		10.00	Each	0.222	1	0.220	\$	2.20
AN929A4J	Cap Stainless		1.00	Each	15.000		15.000	\$	15.00
	Freight		1.00				21.620	\$	21.62
HC-E4N-3Q FLUSH	Propeller N54199		1.00	Each	1,173.900		1,173.900	\$	1,173.90
	Freight		1.00				715.900	\$	715.90
								Parts For This Discrepancy:	\$ 2,485.34
								Total For This Discrepancy:	\$ 7,453.29

Discrepancy: 4**Problem:**

Door cable frayed

Action Taken:

R&I new fwd door cable P/N 89630-004. (31)

Charges This Item:

1.02 Hours @ 95.00 \$ 96.90

Part Number	Description	Credit	Quantity	Units	List Price	Disc	Unit Price	Extended
89630-004	FWD DOOR CABLE		1.00	Each	116.000		116.000	\$ 116.00
								Parts For This Discrepancy: \$ 116.00
								Total For This Discrepancy: \$ 212.90

Discrepancy: 5**Problem:**

R&I oil cooler for metal contamination.

Action Taken:

Installed a new oil cooler P/N 557-204, supply line P/N 566-372 and return line P/N 566-371.

Charges This Item:

4.69 Hours @ 95.00 \$ 445.55

4.69 Hours @ 142.50 \$ 668.32

Part Number	Description	Credit	Quantity	Units	List Price	Disc	Unit Price	Extended
566-372	Hose Assy Return		1.00	Each	2,604.000		2,604.000	\$ 2,604.00
	Freight		1.00				25.000	\$ 25.00
566-371	Hose Assy		1.00	Each	2,585.000		2,585.000	\$ 2,585.00
	Freight		1.00				25.000	\$ 25.00
557-204	Oil Cooler *		1.00	Each	713.940		713.940	\$ 713.94
	Freight		1.00				25.000	\$ 25.00
								Parts For This Discrepancy: \$ 5,977.94
								Total For This Discrepancy: \$ 7,091.81

Discrepancy: 6**Problem:**

A/C not cooling

2850 Airport Blvd.
Abilene Tx. 79602
Phone 325-677-2601
Fax 325-671-8018
Federal ID # 75-1307734

Action Taken:

Serviced A/C with 2.5 lbs R134A ground ops check ok.

Charges This Item:					2.36 Hours @		95.00	\$	224.20
Part Number	Description	Credit	Quantity	Units	List Price	Disc	Unit Price	Extended	
R-134A	FREON		2.50	Each	21.250		21.250	\$	53.12
					Parts For This Discrepancy:			\$	53.12
					Total For This Discrepancy:			\$	277.32

Discrepancy: 7**Problem:**

Standby alternator A/C compressor drive spline sheared

Action Taken:

Installed a new Standby alternator A/C compressor drive assembly P/N 593-100

Charges This Item:				4.26 Hours @		95.00	\$	404.70
Part Number	Description	Credit	Quantity	Units	List Price	Disc	Unit Price	Extended
593-100	Drive Assy A/C & Stby Alt		1.00	Each	2,234.370		2,234.370	\$ 2,234.37
	Freight		1.00				50.000	\$ 50.00
				Parts For This Discrepancy:		\$	2,284.37	
				Total For This Discrepancy:		\$	2,689.07	

Miscellaneous Charges:

		Consumables:		\$	411.89
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Summary:

Total Parts:	\$	9,978.50	Total Freight:	\$	938.27
Consumables:	\$	411.89	Total Labor - 92.56 Hours:	\$	9,015.97
Total Flat-Rate Labor:	\$	1,600.00	Miscellaneous:	\$	15.00

Totals:

WE APPRECIATE YOUR BUSINESS

SubTotal:	\$	21,959.63
Sales Taxes:	\$	227.75
Total Charges:	\$	22,187.38
Amount Remaining:	\$	22,187.38

ABILENE A

2850 Airport
Abilene, TX
Phone 325-67
Fax 325-671
Federal ID # 75.

Scott Oils, Inc.
Attn: Scott Taliaferro
P O Box 240
Abilene, TX 79604

Ext checked by _____
Code <u>8326</u>
Date <u>JUL 11 2016</u>
Approved SLT _____
Field _____
Other _____

Ref # 8

STATEMENT OF ACCOUNT**Outstanding Invoices:**

Ref #	T	Date	Description
16-14015	S	6/30/2016	Shop Work
16-975248	I	6/30/2016	Sales

Current Period Activity:

Ref #	T	Date	Description	
P		5/31/2016	Prior Balance:	2,783
16-974515	I	6/08/2016	Payment	
16-975185	I	6/29/2016	Payment	
16-14015	S	6/30/2016	Shop Work	
16-975248	I	6/30/2016	Sales	

		Aircraft	Ft
Total Charges:	22,962.38		
Total Credits:	0.00		
Total Payments:	2,783.06		
Aged Balances:	0-30	31-60	
	22,962.38	0.00	

Interest of 1.50 % Monthly (18.00% Annually) will be added
Net Terms 10th Following Month

We Appreciate Your Business!

Invoice #	Invoice Amt
06/30/2016 INVOICE	11,046.10
Scott Oils: Invoice for June 2016:	
Hanger \$775.00	
Repairs \$10,271.10	
Total June Bill: 22962.38 - Only pay \$11046.10	
Per STJ	

From: SCOTT OILS, INC
To: ABILENE AERO, INC.
2850 AIRPORT BLVD
ABILENE, TX 79602

Vendor Code
ABIAER

Check Date
08/01/2016

Check Amount
\$11,046.10

Check Number
A-7607

ABILENE A

2850 Airport
Abilene, TX
Phone 325-67
Fax 325-671
Federal ID # 75

Scott Oils, Inc.
Attn: Scott Taliaferro
P O Box 240
Abilene, TX 79604

Ext checked by	
Code	8326
Date	SEP 07 2016
Approved SLT	<i>[Signature]</i>
Field	
Other	

STATEMENT OF ACCOU**Outstanding Invoices:**

Ref #	T	Date	Description
16-14015	S	6/30/2016	Shop Work
16-975564	I	7/08/2016	Sales
16-975993	I	7/22/2016	Sales
16-976239	I	7/29/2016	Sales
16-976289	I	7/31/2016	Sales
16-976355	I	7/31/2016	Sales
16-976647	I	8/08/2016	Sales
16-14113	S	8/18/2016	Shop Work
16-977346	I	8/31/2016	Sales

Current Period Activity:

Ref #	T	Date	Description
	P	7/31/2016	Prior Balance: 24,1
16-976647	I	8/08/2016	Sales
16-14113	S	8/18/2016	Shop Work
16-977133	I	8/25/2016	Payment
16-977346	I	8/31/2016	Sales

Aircraft

Total Charges:	1,943.63
Total Credits:	0.00
Total Payments:	11,046.10

Aged Balances:	0-30	31-60	61-90	90+	Please Pay
	1,943.63	1,620.20	11,916.28	0.00	15,480.11

Interest of 1.50 % Monthly (18.00% Annually) will be added on balances outstanding past 30 days.
Net Terms 10th Following Month

We Appreciate Your Business!

From: SCOTT OILS, INC
To: ABILENE AERO, INC.
2850 AIRPORT BLVD
ABILENE, TX 79602

Invoice #	Invoice Amt
08/31/16 INVOICE	15,480.11
Scott Oils: Invoice for June 2016:	
Hanger \$775.00	
Repairs \$14,705.11	
Total Aug Bill: \$15,480.11	

Vendor Code
ABIAER

Check Date
09/15/2016

Check Amount
\$15,480.11

Check Number
A-7671

? - Pay

Exhibit C

SCOTT OILS, INC
Ledger Listing

01/01/2013 thru 05/31/2019

All Accounts

*** Only Sub-Accounts AMEFLI thru AMEFLI are Included. ***

Balance Forward Options: None

Date	Reference	Jrnl	Description	Invoice#	Amount	Quantity
AMEFLI-3020	ACCOUNTS PAYABLE TRADE - AMERIFLIGHT					
07/22/2016	7594	71	A/P Entry - Handwritten Check		2,280.00	Pd
07/22/2016	8567	72	Hangar Charges 5/10/16 - 6/15/16. 38 Days @ 60.00/day.	16060395	2,280.00-	Pd 07/22/2016
AMEFLI-3020	0.00		YTD Total		0.00 *	
Grand Total=	0.00				0.00	

Exhibit D

AIRCRAFT SALES AGREEMENT

Hairy Dog LLC (herein referred to as "Buyer") hereby agrees to purchase from Global Hunter LLC ("Seller"), the aircraft described as a 2003 Piper Meridian, serial number 4697164, registration number N54199, hereinafter referred to as the "Aircraft." Buyer and Seller are collectively referred to as the "Parties." This Agreement is subject to the following terms and conditions:

I. Purchase Price, Deposit, and Inspection

The total purchase price is nine hundred fifty-seven thousand five hundred dollars (\$957,500). Buyer has placed a deposit of Twenty-Five thousand dollars (\$25,000) with Aero Space Reports, to hold in escrow. If the factory new engine with factory warranty has not been delivered to Abilene, TX for installation, this agreement will terminate on January 1, 2017, unless Buyer and Seller agree to extend this date. Should Buyer terminate this agreement due to the non-delivery of the engine by January 1, 2017 he will be entitled to a return of the deposit. The aircraft shall fly no more than twenty-five hours from its current total time of 1267.9 hours until it departs for the pre-purchase inspection. A pre-purchase inspection consisting of an annual inspection at Cutter Aviation, in San Antonio, TX will be scheduled as soon as the factory new engine is installed. Buyer will pay the costs of this inspection as well as all costs related to ferrying the Aircraft to the place of the inspection and returning it to its current location (including pilot expenses, fuel, landing fees and storage fees) within forty eight (48) hours after the completion of the inspection unless the sale has already closed or the Parties otherwise agree in writing. Buyer shall have access to the Aircraft continuously after it takes possession for the inspection (including flight check). Any flight conducted will be with the Seller as pilot in command. Seller will put in the Aircraft, or otherwise deliver to Buyer for the inspection, all log books (airframe and engine), ground covers, operating manuals, loose equipment, wiring diagrams, and all pertinent paperwork (the "Documentation and Material"). If the pre-purchase inspection reveals airworthiness discrepancies, Seller shall reduce the purchase price by the reasonable and necessary cost to cure such discrepancies. The cost to cure these discrepancies shall be the responsibility of the Seller up to a limit of \$7,500. If the cost of airworthiness discrepancies exceeds \$7500 the Buyer has the option to terminate this agreement and would not be responsible for any costs associated with this agreement (including ferrying expenses, escrow penalty and fees, and pre-purchase / annual inspection costs). An airworthiness discrepancy is defined as any discrepancy that would cause the aircraft to be un-airworthy. The list of airworthiness discrepancies and cost to cure shall be listed on the form attached as Appendix 2, and Buyer shall attach an itemized estimate for cost of cure from a vendor that is generally-accepted in the industry. Seller's maintenance facility (Abilene aero, Inc.) will be used to confirm pricing. Upon Buyer's approval of the Aircraft, Buyer will close the sale and pay the remaining balance of the purchase price, less any allowable reduction for airworthiness discrepancies, to Seller. Closing shall be within three (3) working days of the date the inspection is completed. Should Buyer for any reason refuse to or be unable to comply with the provisions set forth in the previous sentence above or otherwise terminates the Agreement, the deposit shall be paid to Seller as liquidated damages and not as a penalty. Buyer acknowledges that damages for this failure to fulfill this Agreement would be uncertain and difficult to ascertain, and the amount agreed upon as liquidated damages is a reasonable estimate of Seller's likely actual damages.

II. Title and Delivery

Upon delivery of the Aircraft to Buyer at Closing, an authorized representative of Buyer shall execute and deliver to Seller the Certificate of Acceptance of the Aircraft (Delivery Receipt) in the form attached hereto as Appendix 3, while Seller shall deliver to the Buyer the Warranty Bill of Sale in the form attached hereto as Appendix 4 upon acknowledgment of the receipt of the total purchase price specified in paragraph I above. Title to the Aircraft free and clear of all liens and encumbrances, and risk of loss or damage to the Aircraft, shall pass to Buyer when the purchase price is paid in full to Seller at Closing. Seller will maintain full insurance coverage on the Aircraft until the risk of loss passes to Buyer at Closing. Escrow fees will be evenly split between Seller and Buyer.

III. Taxes

Buyer hereby agrees to pay the taxes, duties, or fees that may be assessed or levied by any governmental authority as a result of the sale, delivery, or registration of the Aircraft pursuant to this Agreement but specifically excluding any taxes, duties or fees assessed or levied by any governmental authority as a result of the registration, ownership, or operation of the Aircraft prior to the Closing.

IV. Disclaimer

THE AIRCRAFT IS BEING SOLD IN AN "AS IS" WITH ALL FAULTS CONDITION AND WITHOUT ANY REPRESENTATIONS, OBLIGATIONS, OR WARRANTIES WHATSOEVER (EXCEPT AS TO THE WARRANTIES CONTAINED IN THE WARRANTY BILL OF SALE), AND NO WARRANTY OF ANY TYPE, WHETHER OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE, EXPRESSED OR IMPLIED IN FACT OR BY LAW, IS OR SHALL BE APPLICABLE TO THE AIRCRAFT SOLD HEREUNDER, EXCEPT AS EXPRESSLY PROVIDED HEREIN. SELLER SHALL HAVE NO OTHER OR FURTHER LIABILITY BY REASON OF THE SALE OF THE AIRCRAFT SOLD HEREUNDER, OR OF ITS USE, WHETHER ON THE THEORY OF BREACH OF WARRANTY, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE. BUYER ACKNOWLEDGES THAT IT IS ENTERING INTO THIS AGREEMENT BASED SOLELY ON ITS OPPORTUNITY TO INSPECT, DIRECTLY AND THROUGH EXPERTS, AND ITS PERSONAL KNOWLEDGE OF THE AIRCRAFT AND ITS ACCEPTANCE OF THE AIRCRAFT IN ACCORDANCE WITH THIS AGREEMENT.

V. Flight of the Aircraft Subsequent to Delivery to Pre-Purchase Inspection Facility

After written acceptance by Buyer of the Aircraft for inspection, using the form attached as Appendix 1, and its delivery of the Aircraft to the pre-purchase inspection facility, the Aircraft shall not be flown, other than to return it to its current location, unless otherwise required by the facility to confirm that all aircraft systems are operating in accordance with this Agreement, or in the event other arrangements (mutually acceptable to Seller and Buyer) have been made between the Parties, until Buyer pays the purchase price in full to Seller.

VI. Miscellaneous Provisions

This Agreement shall be construed and interpreted under the laws of the State of Texas. In the event any provision of this Agreement is prohibited by or invalid under applicable law, such provision shall be ineffective only to the extent of such prohibition or invalidity, without affecting the remaining provisions of this Agreement, which shall continue in full force and effect, if the essential terms and conditions of this Agreement for both Parties remain valid, legal, and enforceable. If litigation is instituted to enforce this Agreement, the prevailing party shall be awarded its reasonable and necessary attorney's fees and expenses incurred and all costs of court. Ambiguities, if any, herein shall not be construed against either party, irrespective of which party may be deemed to have authored this Agreement generally or the ambiguous provision specifically. This Agreement constitutes the entire agreement of the Parties hereto with respect to the purchase and sale of the Aircraft; all prior representations and understandings having been merged herein. This Agreement may be supplemented, amended, or revised only in writing by agreement of the Parties. This Agreement is executed on the date shown below.

Dated: 10/24/16

Seller:

Scott J. Lefkowitz
GLOBAL HUNTER LLC

Buyer:

[Signature]
10/24/16

APPENDIX 1

PRE-PURCHASE INSPECTION ACCEPTANCE

Pursuant to paragraph I of the Aircraft Sales Agreement (the "Agreement") between Hairy Dog, LLC (herein referred to as "Buyer") and Global Hunter, LLC (hereinafter "Seller"), Buyer hereby acknowledges and agrees that it has received for inspection, at Cutter Aviation San Antonio, TX, the 2003 Piper Meridian, manufacturer's serial number 4697164, Registration Number N54199 (the "Aircraft").

Dated: _____, 2016.

Buyer

APPENDIX 2

PRE-PURCHASE INSPECTION COMPLETION NOTICE

Pursuant to paragraph 1 of the Aircraft Sales Agreement (the "Agreement") between Hairy Dog, LLC (herein referred to as "Buyer") and Global Hunter, LLC (hereinafter "Seller"), Buyer hereby acknowledges and agrees that it has received for inspection, at a pre-purchase inspection facility, Cutter Aviation, San Antonio, TX, the 2003 Piper Meridian, manufacturer's serial number 4697164, Registration Number N54199 (the "Aircraft"), and found acceptable the condition of the Aircraft, subject to the airworthiness discrepancies (as such terms are defined in paragraph 1 of the Agreement), if any, set forth below:

Airworthiness Discrepancies:

Airworthiness Discrepancies:

The total amount to cure the above-listed airworthiness discrepancies is _____ dollars (\$_____) as shown on the attached itemized estimate.

Dated: _____, 2016.

Buyer

APPENDIX 3

DELIVERY RECEIPT

Pursuant to paragraph I of the Aircraft Sales Agreement (the "Agreement") between Hairy Dog, LLC (herein referred to as "Buyer") and Global Hunter, LLC (hereinafter "Seller"), Buyer hereby acknowledges and agrees that it has received delivery from Seller on this ____ day of _____, 2016 the following Aircraft:

Year/Make/Model: 2003 Piper Meridian
Serial Number: 4697164
Registration #: N54199

Complete with all Documentation and Material described in paragraph I of the Agreement.

Buyer has visually examined the Aircraft and completed a pre-purchase inspection as described in the Agreement, and hereby acknowledges that it satisfactorily complies with all terms and conditions of the above-referenced Agreement. As of this date, Buyer further acknowledges compliance by Seller of all terms and conditions of that Agreement, and associated appendices, and accepts the aircraft "As Is" with all faults (as more specifically set out in the Agreement), and agrees that the Seller shall have no obligation whatsoever in respect to correction of any discrepancies or conditions that may subsequently arise or be discovered.

Dated: _____, 2016.

Buyer

APPENDIX 4

WARRANTY BILL OF SALE

Global Hunter, LLC (hereinafter "Seller"), in consideration of the sum of one dollar (\$1.00) plus other good and valuable consideration paid by Hairy Dog, LLC (herein referred to as "Buyer"), receipt of which is acknowledged, pursuant and subject to the Aircraft Purchase Agreement between Seller and Buyer (the "Agreement"), hereby sells, grants, assigns, transfers, and delivers to Buyer, its successors and assigns, all of Seller's right, title, and interest in and to the Aircraft described as a 2003 Piper Meridian, manufacturer's serial number 4697164, registration number N54199, complete with all Documentation and Material described in paragraph I of the Agreement, hereinafter collectively referred to as the "Aircraft."

Seller hereby represents, warrants and agrees to Buyer its successors and assigns, that (1) Seller is the lawful owner of the full legal and beneficial title to the Aircraft and that Buyer will acquire by the terms of this Warranty Bill of Sale and the FAA Bill of Sale (Form 8050-2) good and full title to the Aircraft and that the Aircraft is free and clear of all mortgages, leases, security interests, claims, charges, liens, and encumbrances of any kind whatsoever; (2) Seller has the right to sell the Aircraft as aforesaid; and (3) Seller shall warrant and defend title to the Aircraft and indemnify Buyer against the claims of any person, party, firm, corporation, or entity of any kind whatsoever which may have attached thereto or arisen prior to transfer of title by Seller to Buyer.

Seller's warranties and representations, including disclaimers and limitations, with respect to the Aircraft are and shall be as set forth in the Agreement.

THE AIRCRAFT IS SOLD "AS IS" WITH ALL FAULTS. NO WARRANTY OF ANY TYPE, WHETHER OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE, EXPRESSED OR IMPLIED, IN FACT OR BY LAW, IS OR SHALL BE APPLICABLE TO THE AIRCRAFT SOLD HEREUNDER, EXCEPT AS EXPRESSLY PROVIDED IN THE AGREEMENT. SELLER SHALL HAVE NO OTHER OR FURTHER LIABILITY BY REASON OF THE SALE OF THE AIRCRAFT SOLD HEREUNDER, OR OF ITS USE, WHETHER ON THE THEORY OF BREACH OF WARRANTY, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE. BUYER AGREES THAT UPON BUYER'S ACCEPTANCE OF THE AIRCRAFT AT DELIVERY AND CLOSING AND BUYER'S ISSUANCE OF APPENDIX 3 TO THE AGREEMENT, BUYER HAS INSPECTED THE AIRCRAFT, HAD THE OPPORTUNITY TO HAVE EXPERTS INSPECT IT, AND FOUND IT TO BE IN ACCORDANCE WITH THE AGREEMENT, AND ANY RIGHT TO OBJECT THERETO IS DEEMED WAIVED.

Seller agrees and acknowledges that the terms and conditions of this Warranty Bill of Sale, including without limitation, all representations, warranties and agreements for the benefit of Buyer, shall survive the delivery of the Aircraft and the delivery, execution, and recording of the Federal Aviation Administration Bill of Sale.

Dated: _____, 2016.

Seller

Buyer

Exhibit E

AIRCRAFT SALES AGREEMENT

Key Aviation Group, LLC (herein referred to as "Buyer") hereby agrees to purchase from Global Hunter LLC ("Seller"), the aircraft described as a 2003 Piper Meridian, serial number 4697164, registration number N54199, hereinafter referred to as the "Aircraft." Buyer and Seller are collectively referred to as the "Parties." This Agreement is subject to the following terms and conditions:

I. Purchase Price, Deposit, and Inspection

The total purchase price is nine hundred fifteen thousand dollars (\$915,000). Buyer will place a deposit of twenty five thousand dollars (\$25,000) with Powell Aircraft Title Services, to hold in escrow. A pre-purchase inspection consisting of an annual inspection limited in scope and detail, logbook inspection, and a borescope of the engine that will be scheduled at Midwest Malibu Center in Hutchinson Kansas. Buyer will pay the costs of this inspection as well as all costs related to ferrying the Aircraft to the place of the inspection and returning it (if the sale does not close) to its current location (including pilot expenses, fuel, landing fees and storage fees) within forty eight (48) hours after the completion of the inspection unless the sale has already closed or the Parties otherwise agree in writing. Buyer shall have access to the Aircraft continuously after it takes possession for the inspection (including flight check). Seller will put in the Aircraft, or otherwise deliver to Buyer for the inspection, all log books (airframe and engine), ground covers, operating manuals, loose equipment, wiring diagrams, and all pertinent paperwork (the "Documentation and Material"). If the pre-purchase inspection reveals airworthiness discrepancies, or any installed equipment not functioning properly, Seller shall reduce the purchase price by the reasonable and necessary cost to cure such discrepancies. The cost to cure these discrepancies shall be the responsibility of the Seller up to a limit of \$7,500. If the cost of airworthiness discrepancies exceeds \$7,500 the Buyer has the option to terminate this agreement and would not be responsible for any costs associated with this agreement (including ferrying expenses, escrow penalty and fees, and pre-purchase / annual inspection costs). An airworthiness discrepancy is defined as any discrepancy that would cause the aircraft to be un-airworthy as determined by Midwest Malibu and is agreed to by Buyer and Seller. The list of airworthiness discrepancies and cost to cure shall be listed on the form attached as Appendix 2, and Buyer shall attach an itemized estimate for cost of cure from a vendor that is generally-accepted in the industry. Seller's maintenance facility (Abilene Aero, Inc.) will be used to confirm pricing. Upon Buyer's approval of the Aircraft, Buyer will close the sale and pay the remaining balance of the purchase price, less any allowable reduction for airworthiness discrepancies, to Seller. Closing shall be within five (5) working days of the date the inspection is completed. The deposit shall become nonrefundable once the Buyer accepts the aircraft.

II. Title and Delivery

Upon delivery of the Aircraft to Buyer at Closing, an authorized representative of Buyer shall execute and deliver to Seller the Certificate of Acceptance of the Aircraft (Delivery Receipt) in the form attached hereto as Appendix 3, while Seller shall deliver to the Buyer the Warranty Bill of Sale in the form attached hereto as Appendix 4 upon acknowledgment of the receipt of the total purchase price specified in paragraph I above. Title to the Aircraft free and clear of all liens and encumbrances, and risk of loss or damage to the Aircraft, shall pass to Buyer when the purchase price is paid in full to Seller at Closing. Seller will maintain full insurance coverage on the Aircraft until the risk of loss passes to Buyer at Closing. Escrow fees will be evenly split between Seller and Buyer.

III. Taxes

Buyer hereby agrees to pay the taxes, duties, or fees that may be assessed or levied by any governmental authority as a result of the sale, delivery, or registration of the Aircraft pursuant to this Agreement but specifically excluding any taxes, duties or fees assessed or levied by any governmental authority as a result of the registration, ownership, or operation of the Aircraft prior to the Closing.

IV. Disclaimer

THE AIRCRAFT IS BEING SOLD IN AN "AS IS" WITH ALL FAULTS CONDITION AND WITHOUT ANY REPRESENTATIONS, OBLIGATIONS, OR WARRANTIES WHATSOEVER (EXCEPT AS TO THE WARRANTIES CONTAINED IN THE WARRANTY BILL OF SALE), AND NO WARRANTY OF ANY TYPE, WHETHER OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE, EXPRESSED OR IMPLIED IN FACT OR BY LAW, IS OR SHALL BE APPLICABLE TO THE AIRCRAFT SOLD HEREUNDER, EXCEPT AS EXPRESSLY PROVIDED HEREIN. SELLER SHALL HAVE NO OTHER OR FURTHER LIABILITY BY REASON OF THE SALE OF THE AIRCRAFT SOLD HEREUNDER, OR OF ITS USE, WHETHER ON THE THEORY OF BREACH OF WARRANTY, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE. BUYER ACKNOWLEDGES THAT IT IS ENTERING INTO THIS AGREEMENT BASED SOLELY ON ITS OPPORTUNITY TO INSPECT, DIRECTLY AND THROUGH EXPERTS, AND ITS PERSONAL KNOWLEDGE OF THE AIRCRAFT AND ITS ACCEPTANCE OF THE AIRCRAFT IN ACCORDANCE WITH THIS AGREEMENT.

V. Flight of the Aircraft Subsequent to Delivery to Pre-Purchase Inspection Facility

After written acceptance by Buyer of the Aircraft for inspection, using the form attached as Appendix 1, and its delivery of the Aircraft to the pre-purchase inspection facility, the Aircraft shall not be flown, other than to return it to its current location, unless otherwise required by the facility to confirm that all aircraft systems are operating in accordance with this Agreement, or in the event other arrangements (mutually acceptable to Seller and Buyer) have been made between the Parties, until Buyer pays the purchase price in full to Seller.

VI. Miscellaneous Provisions

This Agreement shall be construed and interpreted under the laws of the State of Texas. In the event any provision of this Agreement is prohibited by or invalid under applicable law, such provision shall be ineffective only to the extent of such prohibition or invalidity, without affecting the remaining provisions of this Agreement, which shall continue in full force and effect, if the essential terms and conditions of this Agreement for both Parties remain valid, legal, and enforceable. If litigation is instituted to enforce this Agreement, the prevailing party shall be awarded its reasonable and necessary attorney's fees and expenses incurred and all costs of court. Ambiguities, if any, herein shall not be construed against either party, irrespective of which party may be deemed to have authored this Agreement generally or the ambiguous provision specifically. This Agreement constitutes the entire agreement of the Parties hereto with respect to the purchase and sale of the Aircraft; all prior representations and understandings having been merged herein. This Agreement may be supplemented, amended, or revised only in writing by agreement of the Parties. This Agreement is executed on the date shown below.

Dated: 27 September, 2018.

Seller



Buyer



David Goldman for Key Aviation Group, LLC

Exhibit F

SCOTT OILS, INC
Ledger Listing

01/01/2013 thru 05/31/2019

All Accounts

*** Only Sub-Accounts PRAWHI thru PRAWHI are Included. ***

*** Only Journals 70 thru 70 are Included. ***

Balance Forward Options: None

Date	Reference	Jml	Description	Invoice#	Amount	Quantity
PRAWHI-3020 ACCOUNTS PAYABLE TRADE - PRATT & WHITNEY CANADA						
02/15/2017	7923	70	A/P Entry - Check Written		1,299.00	Pd
03/01/2017	7951	70	A/P Entry - Check Written		649.50	Pd
03/08/2017	7957	70	A/P Entry - Check Written		649.50	Pd
03/15/2017	7974	70	A/P Entry - Check Written		2,619.65	Pd
05/01/2017	8048	70	A/P Entry - Check Written		671.15	Pd
05/15/2017	8074	70	A/P Entry - Check Written		671.15	Pd
06/13/2017	8122	70	A/P Entry - Check Written		671.15	Pd
07/14/2017	8172	70	A/P Entry - Check Written		649.50	Pd
08/15/2017	8217	70	A/P Entry - Check Written		649.50	Pd
09/15/2017	8272	70	A/P Entry - Check Written		649.50	Pd
10/13/2017	8335	70	A/P Entry - Check Written		649.50	Pd
11/15/2017	8386	70	A/P Entry - Check Written		671.15	Pd
12/15/2017	8430	70	A/P Entry - Check Written		671.15	Pd
02/01/2018	8508	70	A/P Entry - Check Written		671.15	Pd
03/01/2018	8558	70	A/P Entry - Check Written		671.15	Pd
03/29/2018	8595	70	A/P Entry - Check Written		698.21	Pd
05/01/2018	8649	70	A/P Entry - Check Written		698.21	Pd
05/15/2018	8670	70	A/P Entry - Check Written		698.21	Pd
06/29/2018	8727	70	A/P Entry - Check Written		1,396.42	Pd
08/14/2018	875714	70	A/P Entry - Check Written		698.21	Pd
PRAWHI-3020	16,702.96		YTD Total		16,702.96 *	

Grand Total= 16,702.96

16,702.96

Exhibit G

SCOTT OILS, INC
 Ledger Listing

01/01/2013 thru 05/31/2019

All Accounts

*** Only Sub-Accounts PRAWHI thru PRAWHI are Included. ***

Balance Forward Options: None

Date	Reference	Jrnl	Description	Invoice#	Amount	Quantity
PRAWHI-3020 ACCOUNTS PAYABLE TRADE - PRATT & WHITNEY CANADA						
07/29/2016	9008	72	PT6A-42A Hourly Charge - 5 hours @ \$120.00 per hour + \$49.50 Sales Tax - 06/01/16 - 06/30/16	92250747	649.50-	Pd 03/15/2017
08/31/2016	9007	72	PT6A-42A Hourly Charge - 5 hours @ \$120.00 per hour + \$49.50 Sales Tax - 07/01/16 - 07/31/16	92275324	649.50-	Pd 03/15/2017
11/08/2016	9004	72	PT6A-42A Hourly Charge - 5 hours @ \$120.00 per hour + \$49.50 Sales Tax - 09/01/16 - 09/30/16	92320326	649.50-	Pd 03/08/2017
12/22/2016	8968	72	PT6A-42A Hourly Charge - 5 hours @ \$120.00 per hour + \$49.50 Sales Tax - 11/01/16 - 11/30/16	92367143	649.50-	Pd 03/01/2017
02/07/2017	8924	72	PT6A-42A Hourly Charge - 5 hours @ \$120.00 per hour + \$49.50 Sales Tax	92393655	649.50-	Pd 02/15/2017
02/07/2017	8925	72	PT6A-42A Hourly Charge - 5 Hours @ \$120.00 per Hour	92340108	649.50-	Pd 02/15/2017
02/15/2017	7923	70	A/P Entry - Check Written		1,299.00	Pd
02/20/2017	9006	72	PT6A-42A Hourly Charge - 5 hours @ \$124.00 per hour + \$49.50 Sales Tax - 01/01/17 - 01/31/17	92410093	671.15-	Pd 03/15/2017
03/01/2017	7951	70	A/P Entry - Check Written		649.50	Pd
03/08/2017	7957	70	A/P Entry - Check Written		649.50	Pd
03/10/2017	9009	72	PT6A-42A Hourly Charge - 5 hours @ \$120.00 per hour + \$49.50 Sales Tax - 08/01/16 - 08/31/16	92299642	649.50-	Pd 03/15/2017
03/15/2017	7974	70	A/P Entry - Check Written		2,619.65	Pd
04/17/2017	9076	72	PT6A-42A Hourly Charge - 5 hours @ \$124.00 per hour + \$51.15 Sales Tax - 02/01/17 - 02/28/17	92445775	671.15-	Pd 05/01/2017
05/01/2017	8048	70	A/P Entry - Check Written		671.15	Pd
05/08/2017	9122	72	PT6A-42A Hourly Charge - 5 hours @ \$124.00 per hour + \$51.15 Sales Tax - 03/01/17 - 03/31/17	92461191	671.15-	Pd 05/15/2017
05/15/2017	8074	70	A/P Entry - Check Written		671.15	Pd
06/06/2017	9174	72	PT6A-42A Hourly Charge - 5 hours @ \$124.00 per hour + \$51.15 Sales Tax - 04/01/17 - 04/30/17	92489886	671.15-	Pd 06/13/2017
06/13/2017	8122	70	A/P Entry - Check Written		671.15	Pd
06/30/2017	9235	72	PT6A-42A Hourly Charge - 5 hours @ \$120.00 per hour + \$49.50 Sales Tax - 05/01/17 - 05/31/17	92513798	649.50-	Pd 07/14/2017
07/14/2017	8172	70	A/P Entry - Check Written		649.50	Pd
08/15/2017	8217	70	A/P Entry - Check Written		649.50	Pd
08/15/2017	9276	72	PT6A-42A Hourly Charge - 5 hours @ \$120.00 per hour + \$49.50 Sales Tax - 06/01/17 - 06/30/17	92533137	649.50-	Pd 08/15/2017
09/07/2017	9339	72	PT6A-42A Hourly Charge - 5 hours @ \$120.00 per hour + \$49.50 Sales Tax - 07/01/17 - 07/31/17	92560785	649.50-	Pd 09/15/2017
09/15/2017	8272	70	A/P Entry - Check Written		649.50	Pd
10/05/2017	9390	72	PT6A-42A Hourly Charge - 5 hours @ \$120.00 per hour + \$49.50 Sales Tax - 08/01/17 - 08/31/17	92586395	649.50-	Pd 10/13/2017
10/13/2017	8335	70	A/P Entry - Check Written		649.50	Pd
11/13/2017	9473	72	c	92619602	671.15-	Pd 11/15/2017
11/15/2017	8386	70	A/P Entry - Check Written		671.15	Pd
11/30/2017	9516	72	PT6A-42A Hourly Charge - 5 hours @ \$124.00 per hour + \$51.15 Sales Tax - 10/01/17 - 10/31/17	92647997	671.15-	Pd 12/15/2017
12/15/2017	8430	70	A/P Entry - Check Written		671.15	Pd

SCOTT OILS, INC
Ledger Listing

01/01/2013 thru 05/31/2019

Date	Reference	Jrnl	Description	Invoice#	Amount	Quantity
PRAWHI-3020 ACCOUNTS PAYABLE TRADE - PRATT & WHITNEY CANADA <Continued>						
01/22/2018	9601	72	PT6A-42A Hourly Charge - 5 hours @ \$124.00 per hour + \$51.15 Sales Tax - 11/01/17 - 11/30/17	92663120	671.15-	Pd 02/01/2018
02/01/2018	8508	70	A/P Entry - Check Written		671.15	Pd
02/22/2018	9658	72	PT6A-42A Hourly Charge - 5 hours @ \$124.00 per hour + \$51.15 Sales Tax - 12/01/17 - 12/31/17	92702340	671.15-	Pd 03/01/2018
03/01/2018	8558	70	A/P Entry - Check Written		671.15	Pd
03/20/2018	9702	72	PT6A-42A Hourly Charge - 5 hours @ \$129.00 per hour + \$53.21 Sales Tax - 01/01/18 - 01/31/18	92725771	698.21-	Pd 03/29/2018
03/29/2018	8595	70	A/P Entry - Check Written		698.21	Pd
04/17/2018	9741	72	PT6A-42A Hourly Charge - 5 hours @ \$129.00 per hour + \$53.21 Sales Tax - 02/01/18 - 02/28/18	92754764	698.21-	Pd 05/01/2018
05/01/2018	8649	70	A/P Entry - Check Written		698.21	Pd
05/01/2018	9772	72	PT6A-42A Hourly Charge - 5 hours @ \$129.00 per hour + \$53.21 Sales Tax - 03/01/18 - 03/31/18	92777058	698.21-	Pd 05/15/2018
05/15/2018	8670	70	A/P Entry - Check Written		698.21	Pd
05/30/2018	9821	72	PT6A-42A Hourly Charge - 5 hours @ \$129.00 per hour + \$53.21 Sales Tax - 04/01/18 - 04/30/18	92810127	698.21-	Pd 06/29/2018
06/21/2018	9832	72	PT6A-42A Hourly Charge - 5 hours @ \$129.00 per hour + \$53.21 Sales Tax - 05/01/18 - 05/31/18	92822403	698.21-	Pd 06/29/2018
06/29/2018	8727	70	A/P Entry - Check Written		1,396.42	Pd
08/14/2018	875714	70	A/P Entry - Check Written		698.21	Pd
08/15/2018	9914	72	PT6A-42A Hourly Charge - 5 hours @ \$129.00 per hour + \$53.21 Sales Tax - 06/01/18 - 06/30/18	92858044	698.21-	Pd 08/14/2018
PRAWHI-3020	0.00		YTD Total		0.00 *	
Grand Total=	0.00				0.00	

SCOTT OILS, INC
Ledger Listing

01/01/2013 thru 05/31/2019

All Accounts

*** Only Sub-Accounts WHIHAC thru WHIHAC are Included. ***

*** Only Journals 70 thru 70 are Included. ***

Balance Forward Options: None

Date	Reference	Jrnl	Description	Invoice#	Amount	Quantity
WHIHAC-3020 ACCOUNTS PAYABLE TRADE - THE WHITTEN LAW FIRM, P.C.						
08/15/2016	7626	70	A/P Entry - Check Written		523.56	Pd
10/14/2016	7730	70	A/P Entry - Check Written		768.02	Pd
12/15/2016	7842	70	A/P Entry - Check Written		372.00	Pd
06/13/2017	8129	70	A/P Entry - Check Written		130.00	Pd
08/15/2017	8221	70	A/P Entry - Check Written		1,430.00	Pd
09/15/2017	8278	70	A/P Entry - Check Written		470.78	Pd
10/13/2017	8340	70	A/P Entry - Check Written		365.26	Pd
11/15/2017	8393	70	A/P Entry - Check Written		962.00	Pd
03/01/2018	8563	70	A/P Entry - Check Written		104.00	Pd
04/13/2018	8616	70	A/P Entry - Check Written		650.00	Pd
05/15/2018	8673	70	A/P Entry - Check Written		3,388.82	Pd
08/14/2018	875725	70	A/P Entry - Check Written		5,221.60	Pd
09/14/2018	875765	70	A/P Entry - Check Written		1,426.93	Pd
10/09/2018	875797	70	A/P Entry - Check Written		442.00	Pd
10/16/2018	8790	70	A/P Entry - Check Written		1,284.00	Pd
12/17/2018	875883	70	A/P Entry - Check Written		1,430.00	Pd
01/15/2019	875924	70	A/P Entry - Check Written		353.80	Pd
03/04/2019	875982	70	A/P Entry - Check Written		1,534.00	Pd
03/15/2019	876004	70	A/P Entry - Check Written		6,486.66	Pd
04/15/2019	876041	70	A/P Entry - Check Written		2,782.00	Pd
05/01/2019	876059	70	A/P Entry - Check Written		1,649.63	Pd
WHIHAC-3020	31,775.06		YTD Total		31,775.06 *	
Grand Total=					31,775.06	

Exhibit H

www.citicards.com

Customer Service 1-888-766-CITI(2484)
TTY-hearing-impaired services only 1-800-325-2865

Page

SCOTT L TALIAFERRO JR

Standard Purchases, cont'd

Trans. date	Post date	Description	Amount
----------------	--------------	-------------	--------

02/15	02/15	AMERICAN00123373698685 8004337300 TX	\$229.89
NAME: SELF/CHARLES			
DEPART: 03/06/19			
YUL TO DFW : AA: CLASS: N : STOP: O			

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Customer Service 1-888-766-CITI(2484)
TTY-hearing-impaired services only 1-800-325-2865

Page 5 of 1

SCOTT L TALIAFERRO JR

Standard Purchases, cont'd

Trans. date	Post date	Description	Amount
02/15	02/15	AMERICAN00123373694640 8004337300 TX	\$606.28
		NAME: TALIAFERRO/SCOTT	
		DEPART: 03/03/19	
		DFW TO YUL : AA: CLASS: G : STOP:O	
		YUL TO DFW : AA: CLASS: N : STOP:X	

02/26	02/26	[REDACTED]	\$14.00
02/27	02/27	[REDACTED]	
02/27	02/27	[REDACTED]	
02/28	02/28	AMERICAN00123399723451 8004337300 TX	
		NAME: TALIAFERRO/SCOTT	
		DEPART: 03/04/19	
		DFW TO YUL : AA: CLASS: L : STOP:O	
		YUL TO DFW : AA: CLASS: L : STOP:X	
03/01	03/01	[REDACTED]	
03/01	03/01	[REDACTED]	
03/02	03/02	[REDACTED]	
03/03	03/03	[REDACTED]	



Account Ending 1-07004

Detail Continued

*Indicates posting date

				Foreign Spend	Amount
02/08/19	[REDACTED]	[REDACTED]	[REDACTED]		[REDACTED]
02/08/19	[REDACTED]	[REDACTED]	[REDACTED]		[REDACTED]
02/11/19	[REDACTED]	[REDACTED]	[REDACTED]		[REDACTED]
	8772238023				[REDACTED]
02/12/19	EXP TRAVEL SERVICE AIR CANADA From: DALLAS/FORT WORTH To: MONTREAL DORVAL IN Ticket Number: 01472822329005 Passenger Name: TALIAFERRO/SCOTT Document Type: PASSENGER TICKET	BELLEVUE	WA		\$593.77
02/12/19	EXP TRAVEL SERVICE AIR CANADA From: DALLAS/FORT WORTH To: MONTREAL DORVAL IN Ticket Number: 01472822329016 Passenger Name: SELF/CHARLES Document Type: PASSENGER TICKET	BELLEVUE	WA		\$593.77
02/12/19	HERTZ CAR RENTAL Rental: ABILENE TX Return: ABILENE TX Agreement Number: 380595246 Renter Name: TALIAFERRO /SCOTT	800-654-4173 Date: 19/02/12 19/02/12	TX		\$104.77
	[REDACTED]				[REDACTED]
	[REDACTED]				[REDACTED]
	[REDACTED]				[REDACTED]
	[REDACTED]				[REDACTED]
	[REDACTED]				[REDACTED]
	[REDACTED]	ABILENE	TX		[REDACTED]
02/14/19*	TRANSACTION PROCESSED BY AMERICAN EXPRESS BAGGAGE INSURANCE PREMIUM 800-645-9700 TKT NO. 01472822329016				\$9.95
02/14/19*	TRANSACTION PROCESSED BY AMERICAN EXPRESS BAGGAGE INSURANCE PREMIUM 800-645-9700 TKT NO. 01472822329005				\$9.95
02/14/19	HOTEL BONAVENTURE 00-08032922968 514-8782332	MONTREAL		206.44 Canadian Dollars	\$156.04
02/14/19	HOTEL BONAVENTURE 00-08032922968 514-8782332	MONTREAL		251.80 Canadian Dollars	\$190.33
02/14/19	HOTEL BONAVENTURE 00-08032922968 514-8782332	MONTREAL		206.44 Canadian Dollars	\$156.04
02/14/19	HOTEL BONAVENTURE 00-08032922968 514-8782332	MONTREAL		251.80 Canadian Dollars	\$190.33
	972-8693448	IRVING	TX		
			TX		
		Date: 19/02/13 19/02/15			

Continued on next page

um Card®

SCOTT TALIAFERRO JR
Closing Date 03/08/19

p. 5/1

Account Ending 1-07004

Detail Continued *Indicates posting date

Date	Description	City	State	Foreign Spend	Amount
02/17/19	[REDACTED]	ABILENE	TX		[REDACTED]
02/17/19	[REDACTED]	BOSTON	MA		[REDACTED]
02/20/19	HERTZ CAR RENTAL				

02/28/19	[REDACTED]	DALLAS	TX		[REDACTED]
02/28/19	HOTELS.COM 156365939527 156365939527 HSA1E4 SCOTT TALIAFERRO CHARLES SELF HOTEL BONAVENTURE MONTREAL MONTREAL	HOTELS.COM	WA		\$575.84
02/28/19	[REDACTED]	DALLAS	TX		\$57.16
03/01/19	[REDACTED]	UNIVERSITY PA	TX		[REDACTED]
03/02/19	[REDACTED]	DALLAS	TX		[REDACTED]
03/02/19	[REDACTED]	DALLAS	TX		[REDACTED]
03/02/19	[REDACTED]	DALLAS	TX		[REDACTED]
	800-654-4173 Date 19/02/25 19/03/04		TX		
03/05/19	BEATRICE RISTORANTE RESTAURANT	MONTREAL			
03/07/19	FREEDOM PARK DFW PARKING	972-252-2500	TX	349.07 Canadian Dollars	\$261.97
					\$68.48

Continued on

42

05/21/2019 04:32 pm
Company:00020

SCOTT OILS, INC
Ledger Listing

Page 1

01/01/2018 thru 05/31/2019

All Accounts

*** Only Sub-Accounts LAPROS thru LAPROS are Included. ***

Balance Forward Options: None

Date	Reference	Jrnl	Description	Invoice#	Amount	Quantity
LAPROS-3020 ACCOUNTS PAYABLE TRADE - LAPOINTE ROSENSTEIN MARCHAND MELANCON						
02/19/2019	10210	72	File: 47081-223781 - Global Hunter, LLC v. Des Moines Flying Service, Inc.	518617	4,865.45-	Pd 03/04/2019
03/04/2019	875977	70	A/P Entry - Check Written		4,865.45	Pd
LAPROS-3020	0.00		YTD Total		0.00 *	
Grand Total=	0.00				0.00	

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF TEXAS

ABILENE DIVISION

GLOBAL HUNTER, LLC

PLAINTIFF,

v.

DES MOINES FLYING SERVICE, INC.,

DEFENDANT

§
§
§
§
§
§
§
§
§
§

CIVIL ACTION NO. 1:18-CV-00062

AFFIDAVIT OF MARK REED

STATE OF TEXAS §

COUNTY OF TAYLOR §

BEFORE ME, the undersigned authority, on this day personally appeared MARK REED, who, being duly sworn upon his oath, deposed and stated as follows:

“My name is Mark Reed. I am over the age of eighteen, competent to make this affidavit, and have knowledge of the matter stated herein. The matters stated herein are true and correct.

“I am the Director of Maintenance for Abilene Aero, a company located in Abilene, Texas. Abilene Aero is involved in numerous aspects of the aviation industry, including aircraft sales, charter services, and aircraft hangar rental. Abilene Aero also provides aircraft parts, work on avionics, and aircraft maintenance.

As Director of Maintenance for Abilene Aero, I supervise and assist seven (7) maintenance technicians who provide aircraft maintenance services to our customers. Such services consist of repair work on aircraft engines and airframes and performing annual and/or hourly required inspections.

"I am a 1975 graduate of Southwestern High School located in Piasa, Illinois.

"In 1975, I joined the United States Air Force. After completing basic training, I attended Technical Training School for Jet Aircraft More Than Two Engines (Tech School) at Chanute Air Force Base in Rantoul, Illinois, where I obtained my certificate of completion.

"Upon completion of Tech School, I was assigned to Dyess Air Force Base in Abilene, Taylor County, Texas. While stationed at Dyess Air Force Base, I was a KC135A Crew Chief. As Crew Chief, I was responsible for the day-to-day condition of the aircraft, and accompanied the aircraft on numerous flights.

"While a member of the United States Air Force, and continuing after my honorable discharge from same in 1979, I was employed by Abilene Aero as an aircraft maintenance technician helper. This was for a period from 1977 through 1980. As an aircraft maintenance technician helper, I assisted maintenance technicians in the inspection and repair of general aviation aircraft serviced by Abilene Aero.

"Beginning in 1980 and continuing through part of 1982, I worked as a Diesel Mechanic for Treanor Equipment Company in Abilene, Texas. My duties consisted of overhauling all models of Caterpillar Diesel Engines.

"Beginning in 1982 and continuing through 1989, I was employed as a Rig Technician for GCO Drilling, Inc. in Abilene, Texas. I was responsible for maintaining all equipment associated with land-based oil and gas exploration owned by GCO.

"In 1989, I returned to Abilene Aero. I began as an Aircraft Maintenance Technician helper, moved up to Aircraft Maintenance Technician, obtaining my Air Frame and Power Plant

Mechanic Certification in 1990, and eventually became Director of Maintenance. I have served as Director of Maintenance of Abilene Aero for the past approximately thirteen (13) years.

"I have been a certified Aircraft Maintenance Technician since 1990. I hold a current Airframe certification, with Inspection Authorization. I hold a current Power Plant Certification with Inspection Authorization. I also have a private pilot certificate, which is not current at this time.

"To maintain my certification, I am required to perform at least one annual inspection each quarter of every year, or file twelve (12) Major Repair or Major Alteration forms 337 each year, or eight (8) hours of FAA certified training each year. For the past ten (10) years, I have accomplished all three of these requirements each year.

"As an Aircraft Maintenance Technician for the past 29 years, and continuing through with my duties as Director of Maintenance, I have performed the following tasks and/or procedures on a wide variety of general aviation aircraft:

Annual Inspections;

100 hours Inspections;

Routine Maintenance;

System Trouble Shooting.

"I would estimate that I have performed over 1,000 annual and/or 100 hours inspections since obtaining my inspection certification in 1997. Prior to that I had assisted on numerous annual inspections and 100-hour inspections

"General Aviation aircraft which are not "for hire" are required to have an inspection performed once a year. This is commonly referred to as an "annual" or "annual inspection."

"I am familiar with the aircraft formerly owned by Global Hunter, LLC. That aircraft was a Piper Meridian PA46-500 TP. The aircraft was based at Abilene Aero beginning in 2013 until its recent sale. It was not a "for hire" aircraft, and therefore only required an annual inspection.

"I first became familiar with the aircraft in early 2013, prior to its purchase by Global Hunter, LLC. Scott Taliaferro, Jr. requested that I travel to Pierre, South Dakota, where the aircraft was based at the time, to inspect and "look over" the aircraft, as Global Hunter, LLC was considering purchasing the aircraft.

"I traveled to South Dakota and was able to observe the annual inspection of the aircraft, which was conducted by Mustang Aviation. I was also allowed to review the Engine Log Book and Airframe Log Book of the aircraft.

"The Engine Log Book and the Airframe Log Book are required by the FAA for every general aviation aircraft. These log books are required to be currently maintained and are required to stay with and/or accompany the aircraft. These log books provide a history of the maintenance of the aircraft, and provide a potential purchaser information about such maintenance and the operation of the aircraft.

"My review of the log books indicated that all required maintenance and inspections of the aircraft had been performed, including all maintenance required by previously issued service bulletins. I conveyed the information to Mr. Taliaferro at Global Hunter, LLC.

"Partly based upon my recommendation, Global Hunter, LLC purchased the aircraft, and based the aircraft at Abilene Aero.

"From approximately March 2013 forward, the aircraft was based at Abilene Aero. Abilene Aero performed maintenance on the aircraft during that time including annual

inspections in November, 2013, January, 2015, and January 7 – January 12, 2016. The 2013 and 2015 annual inspections were performed by an Aircraft Maintenance Technician who is no longer employed by Abilene Aero. I was his direct supervisor. I personally performed the January, 2016 annual inspection.

“The annual inspection of this aircraft was performed each time based upon a checklist I had developed basing same upon the criteria set forth in FAR43, Appendix D, Scope and Detail of Annual and/or 100 Hours Inspection, along with guidelines issued by Pratt & Whitney, the manufacturer of the engine. The annual inspections performed on this aircraft always consisted of the following:

- The aircraft would be towed to a maintenance hangar.
- Every part of the aircraft that was reasonable to disassemble would be disassembled. This included the interior of the aircraft and the cowlings.
- Oil filter was removed, inspected, placed in an ultrasonic cleaner to check for and remove any copper, aluminum or other metal shavings or fuzz.
- All parts would be re-assembled, the aircraft would be flown a short distance as a precaution.

“As stated above, the last annual inspection performed on the aircraft prior to the failure of the engine occurred January 7 to January 12, 2016.

“Scott Taliaferro, Jr. was the only pilot of the aircraft once it was purchased by Global Hunter, LLC that I am aware of. As Taliaferro and/or companies he owns or controls have based a number of aircraft at Abilene Aero during my thirty years of working at Abilene Aero, and due to the fact that I have performed maintenance work on such aircraft, I am familiar with him as a pilot. I consider him to be a meticulous pilot, very careful. I have observed him performing pre-

flight checks of the aircraft and considered it to be thorough and beyond a normal pre-flight check. In addition, Taliaferro, though not required by the FAA, maintained a separate log book wherein he recorded data for each flight. This allowed him to spot any trends in the operation of the aircraft, such as various temperatures and fuel usage, so that, if necessary, he could discuss these with me and maintenance could be performed on the aircraft if necessary. I only recall the Fuel Temperature Indicator ever being an issue with the aircraft. The reading ended up being erroneous and was addressed by replacing the sensor. This caused no damage to the engine.

"I note that the aircraft had approximately 930 hours of flight time when purchased by Global Hunter in March 2013. I note that on April 28, 2016, the day of the engine failure, the aircraft had accumulated an additional 360 +/- hours of operation for a total of approximately 1296 hours.

"After the failure of the engine, I, on behalf of Abilene Aero, traveled to DFW airport and removed the damaged engine. It is my understanding that the engine was forwarded or shipped to Pratt & Whitney Canada, the original manufacturer of the engine. A replacement engine was provided by Pratt & Whitney and I, on behalf of Abilene Aero, installed the engine in the aircraft.

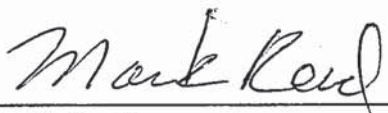
"I have been provided with a document apparently prepared by Pratt & Whitney Canada titled "Engine/Component Investigation Report" dated June 15, 2016 which appears to be the inspection of the engine performed by Pratt & Whitney Canada after the engine failed. That report fixes the engine failure on an improper or incorrect installation of the Accessory Gear Box. The importance of the Accessory Gear Box is that this provides rotational force for all of the components necessary to make the engine operate. A failure of the Accessory Gear Box will result in no fuel or oil to the engine and the engine will completely shut down.

“The Accessory Gear Box is not accessed or disassembled during an annual inspection. This is not required to be done by the FAA, any FAR, or Pratt & Whitney. Therefore, such an improper installation would not and could not be discovered during an annual inspection. In addition, a pilot or owner who is not a certified Aircraft Maintenance Technician is prohibited from performing the type of maintenance on the aircraft that would lead to a discovery of the improper installation of the Accessory Gear Box. The only way this improper installation of the Accessory Gear Box would be able to be discovered would be because of a subsequent inspection of the engine after a failure has occurred with this aircraft, or during a recommended overhaul of the engine.

“The time for an overhaul of this engine is recommended at 3600 hours of engine flight time. As the failure occurred at approximately 1296 hours of flight time, and the average flight time of this aircraft by Global Hunter, LLC was approximately 100 hours per year, an overhaul of this engine would not have occurred for another 22 to 23 years.

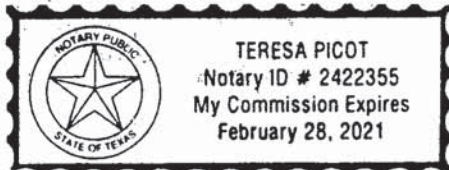
“Global Hunter, LLC and/or its pilot, Taliaferro, would not have been able to discover this improper installation until the engine failed, which it did.”

FURTHER AFFIANT SAYETH NOT.



Mark Reed

SWORN TO AND SUBSCRIBED BEFORE ME, the undersigned authority, on this the
6 day of June, 2019, by Mark Reed to certify which witness my hand and
seal of office.



Teresa Picot
Notary Public, State of Texas

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF TEXAS
Abilene Division

C.A. No. 1:18-CV-062-C

GLOBAL HUNTER, LLC,

Plaintiff,

v.

DES MOINES FLYING SERVICE, INC.

Defendant.

This is the deposition of Mr. Leslie Ederer taken in the above-entitled cause, before Denise Turcot, No. 264848-2, official court reporter for the Province of Québec, on March 5, 2019, at the offices of Lapointe Rosenstein Marchand Melançon LLP, at 1 Place Ville Marie, Suite 1300, Room Forget, in the City of Montréal, Province of Québec.

FILE NO.: 1903051A

DENISE TURCOT, S.O./OCR
38-11, Place du Commerce. Suite 614
Montréal (Québec) H3E 1T8
514.362.8600
steno@deniseturcot. com

1:18-cv-00062-C

LESLIE EDERER

March 5, 2019

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#3 Pratt & Whitney Service Bulletin	49

DENISE TURCOT, S.O./OCR

MAXIN

4

1 In the year two thousand nineteen (2019), this
2 fifth (5th) day of the month of March,
3
4 PERSONALLY CAME AND DID APPEAR:
5
6 LESLIE EDERER
7
8 born August 5th, 1961, Pratt & Whitney
9 investigator, having a place of business at
10 1000 Marie-Victorin, in the City of St-Hubert,
11 Province of Quebec, Canada, UPON HAVING TAKEN
12 A SOLEMN AFFIRMATION, DID DEPOSE AND SAY, as
13 follows:
14
15 DIRECT EXAMINATION BY MR. CHARLES
16 C. SELF:
17 Q. Mr. Ederer, I realize you've already
18 stated your name, but could you go ahead and
19 state your full name for the record, please?
20 A. It's Leslie Roger Ederer.
21 Q. And my understanding is you just
22 identified your birthday as August 5th, 1961?
23 A. That is correct.
24 Q. Good year for births; I have the same
25 one, at least a year. And I believe you

5

1 identified yourself as working for Pratt &
2 Whitney; am I pronouncing that name correctly?
3 I've heard it Pratt & Whitney, I've heard it
4 Pratt & Whitney Canada?

5 A. The correct term here is Pratt &
6 Whitney Canada.

7 Q. If I refer to it as Pratt & Whitney
8 today, will you understand that?

9 A. I would.

10 Q. Thank you, sir. And how long have you
11 worked at Pratt & Whitney?

12 A. Approaching 23 years.

13 Q. The whole time as an investigator?

14 A. Five years of that as a materials
15 investigator, and the remainder of that as an
16 engine investigator.

17 Q. And we'll get into some of the detail
18 here in a minute. I just kind of wanted to it
19 generally. Have you ever given a deposition
20 before?

21 A. Not like this.

22 Q. Okay. When you say "not like this,"
23 what do you mean?

24 A. I have been in a room similar where we
25 talked, but it was more cordial where the

1 A. It's right behind you.
 2 Q. Yes. When did you graduate McGill?
 3 A. 1995.
 4 Q. What was your degree in?
 5 A. The first degree was in metallurgical
 6 engineering.
 7 Q. You said the first degree; have you
 8 received multiple degrees from --
 9 A. I have a post-graduate degree, a
 10 Master's in materials engineering.
 11 Q. So your first degree was metallurgical
 12 engineering?
 13 A. Correct.
 14 Q. Your second degree, or degrees - do
 15 you have more than one?
 16 A. Well, it's a Masters degree.
 17 Q. And that is in what again?
 18 A. Materials engineering.
 19 Q. So you studied metallurgy?
 20 A. Correct.
 21 Q. Are you an engineer?
 22 A. Again, I will have to say no, under
 23 the Quebec definition, I'm not allowed to call
 24 myself an engineer because I do not belong to
 25 the Order of Quebec engineers.

1 Q. Well, in United States, and
2 particularly in Texas, you're licensed as an
3 engineer, are you licensed?
4 A. I am not.
5 Q. Any other type of certifications that
6 you hold?
7 A. Mechanical engineering technologist.
8 Q. Is that the equivalent of a licence?
9 A. It's a college degree over here. It's
10 a three-year program rather than the
11 traditional two years.
12 MR. DON SWAIM:
13 Objection, form.
14 MR. CHARLES C. SELF, III:
15 Q. And, I'm sorry, I missed writing it
16 down, you graduated with your metallurgical
17 engineering degree when?
18 A. 1995.
19 Q. And the Master's degree, as you called
20 it?
21 A. Around 2000.
22 Q. You testified earlier you've been with
23 Pratt & Whitney for approximately 23 years?
24 A. Going on to 23, yes.
25 Q. So that would have been sometime

12

1 around 1995, 1996?

2 A. Correct.

3 Q. Is it safe for me to assume that you
4 went to work for Pratt & Whitney soon after
5 graduating university?

6 A. That is correct.

7 Q. And have been there with Pratt &
8 Whitney that entire time?

9 A. Exactly.

10 Q. Did you start out as an investigator
11 as you are now?

12 A. The first year and a half, I did what
13 is called a blurring, where --

14 Q. I'm sorry?

15 A. Blurring. A blurring is a term they
16 use where they decide where your strengths are,
17 and because they did not know where they wanted
18 to use me, but they did not want to let me go,
19 they sent me to six various engineering groups
20 to spend three months at each group to learn
21 what the group is like, and then to see where
22 I would be a best fit.

23 Q. Eventually, was your best fit as an
24 investigator?

25 A. Correct, a materials investigator.

13

1 Q. And you have acted as a materials
2 investigator, or an investigator, since that
3 time?

4 A. No, I acted as a materials
5 investigator until 2001, and at that point,
6 they realized that abilities were being wasted
7 there, and they said I should be an engine
8 investigator, and I was transferred to engine
9 investigations in 2001.

10 Q. Have you been an engine investigator
11 since 2001?

12 A. That is correct.

13 Q. All that entire time with Pratt &
14 Whitney?

15 A. That is correct.

16 Q. During the course of your employment
17 with Pratt & Whitney since 2001 as an engine
18 investigator, approximately how many engines do
19 you think you've investigated?

20 A. I would have to say somewhere between
21 700 and 1,000.

22 Q. Are these investigations solely
23 limited to failures?

24 A. No, they are not.

25 Q. What other types of investigations

17

1 you attaching it.

2 MR. CHARLES C. SELF, III:

3 Q. Well, then I will make a request of
4 your attorney, I'll do it in writing just so
5 we're official, and request that you provide
6 that to your attorney, who can provide that to
7 me, and then I will provide that to the court
8 reporter, if that's okay?

9 I believe we've covered the fact that
10 your work history has been predominantly for
11 your entire career with Pratt & Whitney Canada?

12 A. That is correct.

13 Q. All right. Have you, other than these
14 reports, these inspection reports, have you
15 published any other type of articles in trade
16 publications?

17 A. No, I have not.

18 Q. Perfect, thank you.

19 As we discussed, we're here today on
20 an engine/component investigation report that
21 I believe you prepared back in May, possibly
22 June, of 2016. And I'm going to hand you what
23 we've marked as Exhibit 1, and ask if you can
24 identify that?

25 MR. JAMES C. STROUD:

18

1 Go through it and see.

2 THE WITNESS:

3 That is the report I wrote, yes.

4 MR. CHARLES C. SELF, III:

5 Q. This is the report that we're here on
6 the deposition today that concerns an engine,
7 a Pratt & Whitney engine that experienced
8 distress, as you called it, back in April of
9 2016, is that correct?

10 A. That's correct.

11 Q. And as you just said, this is a report
12 prepared by you?

13 A. That is correct.

14 Q. Now, I note on page 28, the very last
15 page of the report, it has two signatures, your
16 signature plus R. Benoit.

17 A. Correct.

18 Q. Did Mr. Benoit prepare this report?

19 A. He overviewed it.

20 Q. Would it be safe for me to assume that
21 "overview this," did he supervise this report?

22 A. He corrects my report for grammar and
23 just the overall technical content is sound.

24 Q. As to the actual investigation of the
25 engine in question, he didn't investigate?

23

1 and I'll apologize for that. Understand that
2 members of this jury are going to know even
3 less than I know. So if I ask a question that
4 seems basic or elementary, please forgive me.
5 I just need to get an understanding of what all
6 that's contained in here, okay.

7 I note date investigated is May 2016?

8 A. Correct.

9 Q. It's not a single day, is it?

10 A. No.

11 Q. This is like, in fact, was a multiple-
12 day investigation?

13 A. That is correct.

14 Q. Typically this is not something you're
15 going to do in one day?

16 A. No, it is not.

17 Q. Do you happen to know how long it took
18 you to conduct this investigation?

19 A. I believe this was about a week.

20 Q. Is that, when you say you believe it's
21 about a week, is that what you worked on an
22 entire week?

23 A. That would be correct.

24 Q. Are you required to keep any kind of
25 timesheets as to what you're doing during the

25

1 A. Correct.
2 Q. When it was removed. And I note above
3 that, this gives us a model, PT6A-42A.
4 A. Correct.
5 Q. That is the model of this engine?
6 A. That is correct.
7 Q. And it gives us a serial number,
8 RM0175?
9 A. Correct.
10 Q. And that is, I'm assuming, visibly
11 shown on that engine that you're investigating?
12 A. That is correct.
13 Q. So this tells you exactly what that
14 engine is? Well, I don't want to assume; does
15 this tell us when that engine was manufactured?
16 A. No, it does not say when it's
17 manufactured.
18 Q. Okay. Later on in the report, you do
19 you say that the engine was manufactured June
20 2013? I'm sorry, June 2003. How would you
21 have obtained that information?
22 A. From the manufacturer of records of
23 the engine.
24 Q. And Pratt & Whitney is the
25 manufacturer?

26

1 A. That is correct.
2 Q. Those are records that are available
3 to you?
4 A. Correct.
5 Q. There is a notation or a reference,
6 "Time Since Last Repair: 750.9"?
7 A. Correct?
8 Q. What is that - well, is that telling
9 us the number of hours accumulated on the
10 engine since the last repair of the engine?
11 A. That is correct.
12 Q. And where would you have obtained that
13 information?
14 A. From the log books.
15 Q. So were you provided with the log
16 books?
17 A. I was.
18 Q. How were you provided with the log
19 books?
20 A. It would have arrived with the engine.
21 Q. And are these the log books as kept by
22 the owner of the aircraft?
23 A. I assume so. Generally, we receive
24 only one logbook; there isn't multiple ones.
25 Q. Okay. Going back to page 1, the 10

27

1 parts that are identified. You have identified
2 a shaft coupling, correct?

3 A. Correct.

4 Q. A pinball lock - well, let me back up.

5 You identified a shaft coupling and gave it a
6 serial number?

7 A. I did not.

8 Q. I'm sorry, you didn't give it a serial
9 number, it had a serial number?

10 A. No, it did not.

11 Q. Oh, it did not?

12 A. Not all components are serialized.

13 Q. Okay. I'm saying part number/serial
14 number, would it have had a part number?

15 A. Yes, indeed.

16 Q. Okay, thank you very much. You
17 identified a part number for the shaft
18 coupling?

19 A. Correct.

20 Q. And you noted a condition that it was
21 battered?

22 A. Correct.

23 Q. The next part was the pinball lock;
24 you identified a part number for it, and you
25 stated the condition is worn?

28

1 A. Correct.

2 Q. The next part would have been a spring
3 expander with a part number, and you identified
4 it as fractured?

5 A. Correct.

6 Q. The next part would have been a
7 sleeve-coupling, rear hub; you identified it as
8 battered?

9 A. Correct.

10 Q. The next part was a spring lock
11 insert; you identified it as fractured?

12 A. Correct.

13 Q. The next is a compressor-coupling,
14 rear hub; you identified the condition as
15 damaged splines?

16 A. Correct.

17 Q. The next is an AGB gear shaft drive
18 you identified as fractured?

19 A. Correct.

20 Q. Am I correct that, when you use the
21 term AGB, that is referring to a accessory gear
22 box?

23 A. You are indeed correct.

24 Q. The next part identified as an
25 accessory roller bearing; you identified it as

29

1 distorted?

2 A. Correct.

3 Q. The next part is an accessory roller
4 bearing you identified as distorted?

5 A. Correct.

6 Q. Finally, an oil jet nozzle assembly
7 you identified as fractured?

8 A. Correct.

9 Q. You testified earlier that you
10 reviewed multiple parts and components of this
11 engine, but these are the only 10 listed. Why
12 would only these 10 be listed in your report?

13 A. I would typically list only the ones
14 that are felt to be indicative of the
15 investigation that I was looking at that would
16 be playing a role, whether secondary or
17 primary, it would be what I would list.

18 Q. And that brings up an interesting
19 point: what type of parameters are you given,
20 if any, when you begin an investigation like
21 this?

22 A. There are no initial parameters, other
23 than the report you get of what happened to the
24 engine in the field.

25 Q. You're not told, "Look for this

31

1 Objection, form.
2 MR. JAMES C. STROUD:
3 Go slowly so she can get it.
4 THE WITNESS:
5 "The damages observed on
6 the distressed AGB
7 components are consistent
8 with the AGB gearshaft
9 drive and coupling shaft
10 having run towards the AGB
11 housing and in a position
12 offset. This is believed to
13 have been caused by the AGB
14 coupling shaft and the rear
15 hub compressor coupling not
16 being properly locked
17 together at the proper
18 axial position, pushing the
19 coupling shaft assembly
20 towards the AGB housing.
21 The subsequent fracture of
22 the AGB coupling drive
23 caused the loss of
24 mechanical continuity
25 between the AGB and the

1 compressor which then
2 resulted in a loss of drive
3 to the fuel control unit,
4 main oil pump and RGB
5 scavenge pump. This would
6 be consistent with reported
7 loss of NG and ITT as the
8 engine shutdown due to a
9 lack of fuel."

10 MR. CHARLES C. SELF, III:

11 Q. Paragraph 4.1 that you just read, this
12 is the culmination of your investigation?

13 A. That is correct.

14 MR. DON SWAIM:

15 Objection to form.

16 MR. CHARLES C. SELF, III:

17 Q. Along with paragraph 4.2 and 4.3, is
18 that correct?

19 A. That is correct.

20 MR. DON SWAIM:

21 Objection to form.

22 MR. CHARLES C. SELF, III:

23 Q. Let me re-ask the question. After
24 conducting your week-long investigation, and in
25 fact detailing your week-long investigation in

1 pages 2 through 26, you come to certain
2 conclusions, do you not?

3 A. I do.

4 Q. And those conclusions are contained in
5 paragraphs 4.1, 4.2, and 4.3 on page 28 of this
6 report?

7 A. They are.

8 MR. DON SWAIM:

9 Objection to form.

10 MR. CHARLES C. SELF, III:

11 Q. And these are the conclusions that you
12 came to, correct?

13 A. That is correct.

14 Q. All right. Let's kind of stay on
15 paragraph 4.1 if we can, and let's look at this
16 first sentence, okay. That first sentence is:

17 "The damages observed on
18 the distressed AGB
19 components are consistent
20 with the AGB gearshaft
21 drive and coupling shaft
22 having run towards the AGB
23 housing and in a position
24 offset."

25 Did I read that correctly?

1 A. You did.
2 Q. And that is a conclusion that you
3 drew?
4 A. It's part of it, yes.
5 Q. That you came to?
6 A. Yes.
7 MR. DON SWAIM:
8 Objection to form.
9 MR. CHARLES C. SELF, III:
10 Q. Explain what you meant by using the
11 term "run towards."
12 A. "Run towards meaning that it was
13 operating in not its intended position.
14 Q. So when you use the term "run
15 towards," is that pointing out that this is
16 operating improperly?
17 A. That is correct.
18 Q. And that's a conclusion that you drew
19 or you came to?
20 A. Correct.
21 Q. You used the term "position offset,"
22 what did you mean by that?
23 A. By what I just said earlier, an
24 incorrect position, it was offset from where
25 the expected contact should have been.

35

1 Q. Once again I'm going to apologize
2 because this may be one of those elementary
3 questions, but can you point out to me in
4 section 2, pages 2 through 26, what supports
5 your conclusion that we just went over, the
6 first sentence of paragraph 4.1?

7 A. I would go in the latter, the last two
8 sentences of section 2.11 on page 11.

9 Q. Okay, hang on, let me get there.
10 2.11.

11 MR. JAMES C. STROUD:

12 Hold that up so that he can see it,
13 make sure he's matched.

14 MR. CHARLES C. SELF, III:

15 Q. The pictures would have confused me so
16 I'll, in my little notebook, I didn't keep
17 those, but I do have 2.11. Okay. You've just
18 identified paragraph 2.11 in the Investigation
19 section to support your conclusion in the first
20 sentence of paragraph 4.1?

21 A. That is correct.

22 Q. How so?

23 A. As it says in here:
24 "Both bearing journals of
25 the AGB drive gearshaft

36

1 also showed orbiting and
2 offset wear resulting in
3 material loss of the
4 journals, photos number 19.
5 The journals based on the
6 wear appear to have moved
7 towards the housing side
8 relative the rollers fixed
9 location (dashed arrows,
10 Photo No. 20)."
11 Going to 19 and 20, it points out
12 where the wear was observed.
13 Q. And that was paragraph 2.11?
14 A. Correct.
15 Q. All right. Is there any other portion
16 of the Investigation section which supports
17 that conclusion?
18 A. There is, in 2.11 --
19 Q. So is that the same paragraph we were
20 just discussing?
21 A. Yes, 2.11.
22 Q. Okay. Go ahead, I didn't mean to stop
23 you.
24 A. The second sentence:
25 "The fractured AGB drive

37

1 gearshaft remnants (Photo
2 No. 18 and 19) showed
3 offset gear teeth wear
4 (shaft moved towards the
5 AGB housing side) and
6 orbiting resulting in
7 significant material loss
8 (red arrow Photo No. 20)."
9 Back again to photo 20.

10 Q. I'm not an engineer, I wasn't even any
11 good at math, couldn't have ever been one. In
12 layman's terms, what are you telling us by that
13 sentence?

14 A. In layman's terms, the gear was not
15 running in its proper location. Or not
16 operating, if the word "running" is confusing.

17 Q. I think I understand it. Is there
18 anything else in the investigation section
19 supporting your conclusion that you just read,
20 the first sentence of paragraph 4.1?

21 A. There is, if you give me a few moments
22 to look for it.

23 Q. Yes, sure. And I'm not trying to
24 limit you.

25 MR. JAMES C. STROUD:

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1 And if I can interrupt for one second,
2 he's been referring to text that's
3 distinguished from photographic evidence. If
4 you want to point to a photograph, and I think
5 that's what he's asking as well.

6 THE WITNESS:

7 Okay.

8 MR. CHARLES C. SELF, III:

9 Q. And you seem to have referred to
10 photographs in this text, correct?

11 A. Correct.

12 All right, in section 2.14, on page
13 14, the last sentence:

14 "Examination of the
15 coupling shaft splines
16 showed wear only on one
17 side of the splines (red
18 arrows) except for one
19 spline which showed a
20 localized worn region near
21 the front end of the spline
22 that extended to both its
23 sides (circled, Photo No.
24 32). The wear was similar
25 to the wear observed on the

1 pin ball lock."
2 Q. What is that telling us?
3 A. In layman's terms, I had wear where
4 there should not been because the component was
5 not sitting in its right location.
6 Q. I'm assuming this is metallic?
7 MR. DON SWAIM:
8 I'm sorry, could you say that last
9 word again?
10 MR. CHARLES C. SELF, III:
11 Metallic?
12 MR. DON SWAIM:
13 Yes, I didn't understand that's what
14 you said. Thank you.
15 MR. CHARLES C. SELF, III:
16 Q. These are metal parts, correct?
17 A. That is correct.
18 Q. And metal parts are going to
19 occasionally show wear?
20 A. That is correct.
21 Q. That's going to be typical of any
22 metal part?
23 A. That is correct.
24 Q. And I'll apologize, I kind of equate
25 this to an automobile engine, that's the

40

1 closest I'm ever going to get on something like
2 this. Is the wear you're referring to here
3 what I would call normal wear and tear, or is
4 this something else?

5 MR. DON SWAIM:

6 Objection to form.

7 THE WITNESS:

8 This is not typical wear, and if I may
9 add, because this being not typical wear, there
10 is a picture in this report showing, for this
11 part, a typical wear on the part versus our
12 part.

13 MR. CHARLES C. SELF, III:

14 Q. Okay. Any other portions of the
15 Investigation section which supports the
16 conclusion contained in the first sentence of
17 paragraph 4.1?

18 A. There is other wear patterns observed
19 on some of the broken parts that suggest they
20 wore in a location that is not typical.

21 Q. It was not the normal wear you would
22 have expected to find?

23 A. That is correct.

24 Q. The fact that you found this wear
25 indicated to you what?

41

1 A. That the train of components were not
2 sitting in their correct expected position.

3 Q. Okay. Other than those that you've
4 just identified to support your conclusion in
5 4.1, are there any other sections of the
6 Investigation portion of the report which
7 support your conclusion of the first sentence
8 of paragraph 4.1?

9 A. I have to be honest that I cannot
10 recollect if there's anything else but these
11 were the major points that I could recollect.

12 Q. Fair enough. Now, based upon your
13 conclusions, it appears that the problem
14 occurred, based on your conclusions, with the
15 accessory gear box, am I correct in that?

16 MR. DON SWAIM:

17 Objection to form.

18 THE WITNESS:

19 It appears to be related to the
20 accessory gear box, correct.

21 MR. CHARLES C. SELF, III:

22 Q. When you began this investigation,
23 were you tasked with solely examining the
24 accessory gearbox, or the entire engine?

25 A. I'm tasked to decide what I'm going to

1 points that go into your conclusion in the
2 first sentence?

3 A. I believe the major points have been
4 covered.

5 Q. And that would be the first sentence
6 of paragraph 4.1?

7 A. Well, I believe all the conclusions
8 are pertinent for this.

9 Q. All right. Let's look at the second
10 sentence of 4.1, if we could. I'm going to read
11 that to you, if you could follow along.

12 The second sentence is:

13 "This is believed to have
14 been caused by the AGB
15 coupling shaft and the rear
16 hub compressor coupling not
17 being properly locked
18 together at the proper
19 axial position, pushing the
20 coupling shaft assembly
21 towards the AGB housing."

22 Did I read that correctly?

23 A. Yes, you did.

24 Q. You used the term "not being properly
25 locked together at the proper axial position";

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1 of the accessory gearbox coupling shaft was
2 installed incorrectly on the engine in
3 question?

4 MR. DON SWAIM:

5 Objection to form.

6 THE WITNESS:

7 My conclusion was that it was not in
8 its correct place.

9 MR. CHARLES C. SELF, III:

10 Q. And is that different from being
11 installed incorrectly?

12 A. I did not do the investigation of the
13 installation so I cannot conclude that.

14 Q. Okay. I'm going to hand you what
15 we'll mark as Exhibit 3.

16 OFF-THE-RECORD DISCUSSION

17 MR. CHARLES C. SELF, III:

18 Q. I will hand you what we'll mark as
19 Exhibit 3, let me hand you that. I know you're
20 looking at your attorney's.

21 Just for the sake of the record, let
22 me trade those up. You take the one with the
23 sticker and give that one to your lawyer.

24 A. Okay.

25 Q. This appears to be a Pratt & Whitney

51

1 installed?

2 A. I found it was not in the correct
3 position, but I cannot comment if it was
4 incorrectly installed.

5 Q. Would the fact that it could have been
6 - sorry, let me rephrase.

7 Would incorrectly installing the lock
8 ball of the accessory gearbox coupling shaft,
9 could it have led to the problem that you
10 observed?

11 MR. DON SWAIM:

12 Objection to form.

13 THE WITNESS:

14 It could have led to the problem.

15 MR. CHARLES C. SELF, III:

16 Q. But you're not here to say that it did
17 or did not?

18 A. That is correct.

19 Q. Your conclusion is that - I'm sorry,
20 I don't want to state it, your conclusion as to
21 that, the accessory gearbox coupling shaft is
22 what?

23 A. That it was in the incorrect expected
24 position.

25 Q. And one of factors, or one of the

53

1 investigation section that supports your
2 conclusions? I believe you referenced
3 paragraph 2.14?

4 A. And 2.11, I believe is the major crux
5 of the investigation.

6 Q. All right. Let's look at the third
7 sentence of paragraph 4.1. And I'll read that
8 to you:

9 "The subsequent fracture of
10 the AGB coupling drive
11 caused the loss of
12 mechanical continuity
13 between the AGB and the
14 compressor which then
15 resulted in a loss of drive
16 to the fuel control unit,
17 main oil pump and RGB
18 scavenge pump."

19 Did I read that sentence correctly?

20 A. That is correct.

21 Q. And is that a conclusion you came to
22 after your investigation of this incident?

23 A. I did.

24 Q. I believe we just talked about - I
25 wrote it down, now I've lost it - RGB is what

1 again?

2 A. Reduction gearbox.

3 Q. What is that conclusion in layman's,
4 if possible, tell us?

5 A. Once you are not driving the
6 compressor - I should say it the other way
7 around. Once the compressor is not driving the
8 AGB, your accessories gearbox has your fuel
9 control unit, which is your fuel to your
10 engine, but it's driven as the engine's
11 running, it drives the fuel pump. If you lose
12 continuity between there, there's nothing to
13 drive the fuel pump, there's no more fuel
14 coming to your engine, your engine has no fuel
15 and it just shuts off, just like your car, if
16 you run out of fuel, you sputter and stop.

17 Q. There's nothing feeding the engine any
18 fuel?

19 A. That's correct.

20 Q. So the accessory gearbox is a pretty
21 important component of this engine, would you
22 agree?

23 A. All of the components work together,
24 but yes, it is important.

25 Q. Well, the engine is not going to run

58

1 they immediately remove them and put them in a
2 safe locker.

3 Q. But you had access to the log books?

4 A. I did.

5 Q. And you reviewed the log books on this
6 engine?

7 A. I did.

8 Q. My understanding is there is kind of
9 two log books for an aircraft?

10 A. There's a gas generator log book and
11 a power section log book for this type of
12 engine

13 Q. And were both of those present?

14 A. I don't remember, to be quite honest.

15 Q. If they were, would you have reviewed
16 them?

17 A. I would have.

18 Q. You don't make a notation in your
19 report that they were missing, do you?

20 A. I do if they were not available, I
21 would generally put "the log books were not
22 received with the engine," and I did not put
23 that in this case.

24 Q. But that leads you to the conclusion
25 that the log books were present?

63

1 talked about?

2 A. I'd have to look at - I don't remember
3 offhand what it was, but I would assume that's
4 what I have, unless we go and look at it and
5 see what they --

6 Q. Is there any portion of your
7 investigation section that you can look at that
8 confirms that?

9 A. Yes.

10 Q. Could you take a minute to look at
11 that, please?

12 A. Yes. In section 2.18, on page 24 of
13 28.

14 Q. Okay. And in that section, you state:
15 "The fracture surfaces of
16 the AGB gearshaft drive
17 were significantly
18 battered."

19 And you refer to photograph number 44.

20 A. That is correct.

21 Q. "Resulting in only a small
22 fracture region on the
23 splined end."

24 And you refer to a circle on photo number 44?

25 A. Correct.

64

1 Q. "That could be examined-"
2 Once again referring to the circled portion of
3 the photograph 44.
4 "The fractured surface,
5 which slanted towards 45
6 degrees, was indicative of
7 sheer overload."
8 A. That is correct.
9 Q. In layman's terms, is that the sudden
10 break?
11 A. Yes. But in this case, when it's
12 sheer overload, as in this case, it just
13 snapped like this, but it was sudden.
14 MR. DON SWAIM:
15 Objection to form, non-responsive.
16 MR. CHARLES C. SELF, III:
17 Q. The gesture you just made was almost
18 a twisting type motion.
19 A. Correct.
20 Q. As opposed to the gesture earlier of
21 a snap motion?
22 MR. DON SWAIM:
23 Objection to form.
24 MR. CHARLES C. SELF, III:
25 Q. Is paragraph 2.18 showing you a

65

1 twisting type break?

2 A. It may be, I don't have enough, but in
3 my mind, it was a sheer overload; both of those
4 motions can create a sheer overload.

5 Q. Are you saying that this was a quick
6 sudden break as opposed to a worn out over
7 time?

8 A. That is correct, the overall point is
9 that.

10 Q. Okay. Now, you also state, let me get
11 back to it; let me back up a minute. The
12 twisting, is that a torque?

13 A. Yes, but that was my mistake in that,
14 when I showed that, I'm so used to doing
15 fractures, to me, when there is a shaft, I
16 immediately think of torsional shear.

17 Q. Is that --

18 A. That's a twisting, but as I said, in
19 here, I didn't have enough that clearly showed
20 me a torsional shear. I did have enough that
21 I had a sheer overload. It was just by habit
22 that I showed you, but it could easily have
23 been it got pushed and broken. But I can't
24 differentiate at this point which one, but both
25 are sudden and both are in overload.

66

1 Q. And both are not worn out over time?
2 A. Correct.
3 Q. But sudden?
4 A. Correct.
5 MR. DON SWAIM:
6 Objection to form.
7 MR. CHARLES C. SELF, III:
8 Q. You also state in paragraph 4.2:
9 "The fracture of the oil
10 jet nozzle was secondary."
11 I'm kind of parsing 4.2.
12 A. Yes.
13 Q. If I parse that:
14 "The fracture of the oil
15 jet nozzle was secondary."
16 A. Correct.
17 Q. Is a conclusion you reached?
18 A. Correct.
19 Q. What do you mean by that?
20 A. If we go to section 2.17 on page 23 --
21 Q. And you state in section 2.17:
22 "The fracture surfaces of
23 the oil jet nozzle assembly
24 were examined and were
25 found to be indicative of

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1 overload fractures."
2 Referring to photographs 42 and 43.
3 MR. DON SWAIM:
4 Objection to form.
5 MR. CHARLES C. SELF, III:
6 Q. Is that correct?
7 A. That's correct.
8 Q. Did I read your report correctly?
9 A. You did.
10 Q. What do you mean by that?
11 A. It shows an overload fracture which
12 again is, in this case, typical of a sudden
13 fracture.
14 Q. It was a sudden fracture, not worn out
15 over time?
16 A. Correct.
17 Q. And once again in paragraph 4.2, you
18 state:
19 "The fracture of the spring
20 lock insert was secondary."
21 Is that correct? Is that a conclusion you
22 reached?
23 A. Yes.
24 Q. And what in your investigation section
25 supports that?

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1 A. Look at 25 and see, it shows it.
2 Q. You're referring to page 25?
3 MR. JAMES C. STROUD:
4 2.15, I think is the paragraph
5 perhaps.
6 MR. CHARLES C. SELF, III:
7 I think that's going to be related to
8 4.3.
9 A. There's just a lot of components with
10 spring in the name, so I just need a moment to
11—
12 Q. No problem.
13 A. Ah, thank you, 2.19. That is correct.
14 MR. JAMES C. STROUD:
15 2.19, I think that's on page 25.
16 THE WITNESS:
17 Correct.
18 MR. CHARLES C. SELF, III:
19 Q. So, section 2.19 of the investigation
20 section of this report references the fracture
21 of the spring lock insert being secondary?
22 A. Correct.
23 Q. And, in fact, that section reads, or
24 does it:
25 "The spring lock insert

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1 fracture surfaces showed
2 significant rubbing
3 damages, however in small
4 undamaged regions the
5 original fracture surface
6 could still be observed."

7 Referring to photograph number 46.

8 A. Correct.

9 Q. Did I read that correctly?

10 A. That's correct.

11 Q. "The fracture surface
12 morphology of these regions
13 showed flat surfaces with,
14 river lines and beach marks
15 indicative of fatigue crack
16 propagation."

17 Referring to photograph number 47. Did I read
18 that correctly?

19 A. You did.

20 Q. "The fracture surfaces on
21 the spring lock legs showed
22 similar features."

23 What does that tell us?

24 A. This was a time - it took time for the
25 spring lock fracture to form.

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1 Q. Okay. Was it not a secondary fracture
2 then?

3 A. It's still secondary, but for a
4 different reason.

5 Q. And why is it a different reason?

6 A. For the fatigue to form on this, it
7 means it had to have unusual vibrations.
8 Generally vibrations are a big cause of
9 fatigue, and in the case of the legs on this,
10 what I observed is that, on the inside of the
11 spring expander, the ends of the legs of the
12 spring lock insert were rubbing where they
13 should not have been, and it indicates that the
14 legs were not in position, and so they were
15 contacting and creating a vibration that was
16 going into this component.

17 Q. So your conclusion was these legs were
18 in an incorrect position?

19 A. Correct.

20 Q. Okay. Does that indicate to you they
21 were incorrectly installed?

22 A. It indicates it was in the incorrect
23 position.

24 Q. Are you able to tell whether or not
25 they were installed correctly or not?

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1 and so this is why I believe I did not mention
2 it later on.
3 Q. All right. The AGB gear shaft drive
4 fracture, what type of fracture was that?
5 A. That was a sheer fracture.
6 Q. Is that a secondary fracture?
7 A. Yes, this was the one we discussed
8 earlier.
9 Q. Yes, sir.
10 A. Yes.
11 Q. And the oil jet nozzle assembly?
12 A. That was overload fracture, again,
13 secondary.
14 Q. Okay. At one point in your report,
15 you noted that wear on the ball lock and
16 splines; do you recall that?
17 A. Correct?
18 Q. What does that mean?
19 A. Do you want layman's terms again?
20 Q. Yes, sir.
21 A. When you have two components that are
22 pressed against each other, and over time with
23 vibration, you get fretting wear. If you think
24 about when you have, in your car, your engine,
25 over time, your piston rings, they're going to

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1 wear. If they're in the proper location,
2 they're going to wear normally and you'll have
3 a long life with your engine. If they're not
4 put in properly, they're going to wear, but
5 they're going to be a rapid wear, an abnormal
6 wear, and you'll very quickly find out down the
7 road, but you may go a couple of years, but you
8 may find out that your engine doesn't get to
9 the life that is expected of it. The wear
10 between this pin ball and the spline is that
11 kind of wear. Being in an incorrect position,
12 the two have been forced together, that is what
13 you can see from the location of the wear we
14 discussed earlier of the pin, the unusual wear
15 which I mentioned as well.

16 And the spline wear, this indicates
17 that they had been forced together and had, for
18 some period of time, been wearing to allow it
19 to get - because when you have hardened
20 surfaces like that, just like your piston ring
21 in your cylinder sleeve, you will wear normally
22 over time, but if you have them incorrectly,
23 you will accelerate the wear, but it will still
24 take time.

25 And that's what you're seeing over

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1 here is something that took time to wear in an
2 incorrect position because of the incorrect
3 position.

4 Q. So the incorrect position is causing
5 the wear?

6 A. Correct.

7 Q. That's your conclusion?

8 A. Correct.

9 Q. And is it the splines that tell you
10 this?

11 A. Both the splines and the balls.

12 Q. All right.

13 A. Not the balls; singular, ball.

14 Q. You also note in your report wear on
15 the drive gear teeth. Is this evidence of an
16 improper position?

17 A. Wear on the drive teeth on its own is
18 not, it's the location of where the wear was on
19 this one that is an indication.

20 Q. And do you recall where the location
21 of the wear was?

22 A. As we've said in 2.11, it was offset.

23 Q. Meaning in an incorrect position?

24 A. Correct.

25 Q. I know you may have covered this

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1 A. That is correct.

2 MR. DON SWAIM:

3 Objection to form.

4 MR. CHARLES C. SELF, III:

5 Q. Am I properly characterizing your
6 testimony?

7 A. Yes, you are.

8 Q. The fact that you found and/or
9 observed parts being in an incorrect position,
10 or came to the conclusion that they were in an
11 incorrect position, would you have been able to
12 discover this without breaking down or tearing
13 down this engine?

14 A. Not at all.

15 Q. Would the owner of this aircraft be
16 able to, if you know, open up the housing of
17 this engine and observe this problem?

18 A. I can't answer because the owner would
19 not himself be allowed to open that housing, so
20 he would never have that opportunity.

21 Q. And my understanding is aircraft go
22 through what we'll call an annual inspection?

23 A. Correct.

24 Q. Are you familiar with that term?

25 A. I've heard that term before.

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1 deeper than what I believe would have been
2 done.

3 MR. CHARLES C. SELF, III:

4 Q. I realize I've asked this, kind of all
5 we've talked about this morning, but in
6 layman's terms, what caused this aircraft
7 engine to stop operating?

8 MR. DON SWAIM:

9 Objection to form.

10 THE WITNESS:

11 I can only answer you factually, based
12 on what I saw was that some components were in
13 an incorrect position that resulted in the
14 eventual decouple of the compressor from the
15 AGB, which resulted in the in-flight shutdown.

16 MR. CHARLES C. SELF, III:

17 Q. And when you say "resulted in the in-
18 flight shutdown," is that the same as caused
19 this engine to stop running?

20 A. That is correct.

21 MR. DON SWAIM:

22 Objection to form.

23 MR. CHARLES C. SELF, III:

24 Q. And, in fact, this engine stopped
25 operating --

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1 which suggests some time did take place. And
2 when I say some time, it's more than a couple
3 of minutes. But when you asked me what period
4 of time, I don't believe anyone can qualify an
5 exact amount of time. This is a science where,
6 just an example, spalling on a bearing, we know
7 that bearings can spall for a while; given the
8 same load condition, a bearing can make its
9 intended service life and be fine. Given the
10 change in condition, a bearing can fail within
11 an hour of its spall.

12 So, again, when we look at everything,
13 we have to look at the whole of it, of all the
14 components, what were the damages, determine
15 what would have been a sudden event versus what
16 took time.

17 Now, in my opinion, the wear that I
18 observed on the ball lock, the fatigue on the
19 legs, these are suggestive of a longer time
20 period. If you asked me did it take 750 hours?
21 I could never say yes it took 750, but I can
22 certainly say it did take - and it may not be
23 impossible that it took 750. But if you asked
24 me did this happen suddenly in a few hours, I'd
25 say no. Some components, yes, but some of

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1 these components, hardened material like that,
2 to wear in a few hours would be - I've never
3 seen that in my experience.

4 And in wear tribology, that would be
5 very hard to explain too.

6 So going backwards, to answer your
7 question, I believe this could have taken a
8 longer period, and 750 hours is a plausible in
9 this case.

10 MR. DON SWAIM:

11 Objection to the responsiveness.

12 MR. CHARLES C. SELF, III:

13 Bear with me a minute, please, sir.

14 Q. Am I understanding your testimony
15 correctly then that the gradual wear patterns
16 on the parts that we've discussed that you've
17 noted, that is indicative of an improper
18 positioning of these parts?

19 A. That is correct.

20 Q. And would this improper positioning
21 been detected - or let me rephrase that. Is it
22 true that this improper positioning would not
23 have been detected or recognized until the
24 rapid deterioration had occurred?

25 MR. DON SWAIM:

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1 Service installed the accessory gearbox, true?

2 A. Sorry, no, that's not speculation.

3 Q. Okay. What is not speculation?

4 A. That's factual.

5 Q. So, you are now saying that it was the
6 installation, 750 hours before, that there was
7 misalignment at that time?

8 A. I'm not saying that.

9 Q. Because you don't know that?

10 A. I don't know what was done. I am
11 saying that the parts factually show only one
12 pattern from that point. Now, if there was any
13 other point in time, it's not showing me
14 anything else on the engine. There was only
15 one running pattern on these new components,
16 two running patterns on the older components.

17 Q. I understand that, and I appreciate
18 that. As it relates to the two patterns, how
19 long did those two patterns exist?

20 A. That's an interesting question. If I
21 did not have the new patterns in there, I would
22 not have been able to answer factually as I did
23 because I would not be able to say when each
24 pattern occurred. But the new components that
25 have no previous pattern indicate that, in

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1 their running time, they had only one pattern.

2 So, based on the one pattern and 750 hours, it
3 had to occur in that time.

4 Q. As it relates to an operation of
5 engines, what we have are situations where wear
6 occurs, is that correct?

7 A. That is correct.

8 Q. When wear occurs, most frequently,
9 there is some removal of material from the
10 component, is that correct?

11 A. That is correct.

12 Q. And that removal from the opponent
13 would be the removal of metal, is that true?

14 A. That is correct.

15 Q. So, there would be evidence of some
16 amount of metal in the oil, is that true?

17 A. It might be, but it might not be
18 viewable.

19 Q. I understand that.

20 A. Correct though, but you would have.

21 Q. And as it relates to the monitoring of
22 metal in oil, does Pratt & Whitney Canada
23 recommend the monitoring of oil?

24 A. We have a program we offer, but it's
25 not mandatory.

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1 an issue with an aircraft, could be - NTSB
2 might call to say they're not going to
3 investigate it, but Pratt & Whitney might be
4 aware if there was an in-flight shut down. And
5 then there's RCRM, where a field rep can put it
6 into the system, and then it will be brought in
7 that way.

8 Q. Okay. I want to make sure I
9 understood this testimony. You, I believe,
10 testified that your conclusion was the lockball
11 was not in the correct place?

12 A. Correct.

13 Q. But ultimately, you said that you
14 could not conclude it was improperly installed,
15 you didn't do that investigation?

16 A. I did not.

17 Q. If you were going to do that
18 investigation, what additionally would you have
19 done?

20 A. That's beyond my expertise, so I would
21 not have even - I can't tell you because I
22 don't go that far.

23 Q. That's something that you would have
24 gone to somebody else at Pratt & Whitney
25 Canada?

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1 it is small pieces.

2 Q. And again, that's something that
3 ultimately ends up in the oil, is that correct?

4 A. That is correct.

5 Q. And that's one of the things that you
6 look for in wear as it relates to components in
7 the oil, is that correct?

8 A. It is a difficult - yes, you do, but
9 there is a limit to what you can do.

10 Q. Sure. As it relates to the
11 recommended testing that Pratt & Whitney Canada
12 recommends, what is the purpose of that
13 testing, that oil testing?

14 A. It's to improve your chances to be
15 able to find an early distress, but as I said
16 before, unfortunately, no system is 100%
17 because these small particles you talk about
18 can be made in such small quantities that they
19 may not be discovered.

20 Q. I just want to go back and sort of
21 take a big picture on this particular
22 investigative report, exhibit number 1.

23 As it relates to this particular
24 investigation, this accessory gearbox was put
25 on this engine about 10 years before it was



Service Investigation

Engine / Component Investigation Report

P&WC 1076 (03-04)

Report No.: 16SIE00152**S/O: 192478****Customer:** Scott Oils Inc.**Model:** PT6A-42A**Date Investigated:** May 2016**Serial No.:** RM0175**Time Since Last O/H:** N/A**Total Time:** 1296.1**Time Since Last Repair:** 750.9**Total Cycles:** 1200**Cycles Since Last Repair:** 904**Previous Repair by:** Des Moines Flying Services (DMFS) Inc.**Reason for Previous Shop Visit:** Low Oil pressure**Date Engine Manufactured:** June 2003**Reason for Engine Removal:** In Flight Shutdown (IFSD)**Major Part(s) Affected**

Part No./Serial No.	Description	Condition	Time/Cycles
3119369-01	Shaft Coupling	Battered	1296.1 / 1200
3113608-01	Pin Ball Lock	Worn	1296.1 / 1200
3113607-01	Spring Expander	Fractured	1296.1 / 1200
3113605-01	Sleeve-Coupling, Rear Hub	Battered	1296.1 / 1200
3113604-01	Spring Lock Insert	Fractured	1296.1 / 1200
3114832-01 / 47W260	Compressor-Coupling, Rear Hub	Damaged Splines	1296.1 / 1200
3116496-01	AGB Gearshaft Drive	Fractured	750.9 / 904
3037278 / FA0533989	Accessory Roller Bearing	Distorted	750.9 / 904

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Service Investigation

Engine / Component Investigation Report

P&WC 1075 (03-04)

Report No.: 16SIE00152**S/O: 192478**

3037278 / FA0307723	Accessory Roller Bearing	Distorted	1296.1 / 1200
3116530-01	Oil Jet Nozzle Assembly	Fractured	1296.1 / 1200

1.0 Synopsis

- 1.1 It was reported that on the 28 April 2016 that after about an hour of flight of a Piper Malibu Meridian, Registration No. N54199, the pilot heard a loud noise and the engine stopped running. The propeller was observed to still rotate but the gas generator speed (Ng) and the inter turbine temperature showed the engine was not operating. Engine inspection after landing showed no oil in the sight glass and no oil was observed on the exterior of the aircraft.
- 1.2 On site evaluation of the subject engine by the Pratt & Whitney Canada (P&WC) Field Service Representative showed the propeller, power section and compressor rotated freely. The AGB accessories rotated freely but the compressor did not rotate while rotating the AGB. Approximately two tenths of oil was present on the dip stick. No evidence of any external oil leakage and oil trace amounts observed in the gas path. The magnetic chip detector light was illuminated in the cockpit. The engine was removed and sent for investigation to P&WC Service Centre St. Hubert.
- 1.3 In March 2006, due to low oil pressure, the AGB assembly TSN 545.2 was removed from the subject engine and sent to Pratt & Whitney Engine Services, Orlando, Florida for repair. The main oil pump assembly was reinstalled with new pump housing, cover, gears and seals. The original AGB diaphragm due to wear at the main oil pump bushing was exchanged with an overhauled diaphragm. Five accessory roller bearings (P/N 3037278) were replaced for fluting and scoring and 1 accessory roller bearing (P/N 3037278) at the gearbox No. 3 boss for distress. The AGB input drive gear (P/N 3116496-01) and pressure pump drive gear P/N (3008127) were replaced for a scored bearing journal. The accessory drive gear (P/N 3100450-01), starter generator drive gear (P/N 3116498-01) and fuel control drive gear (P/N 3104152-01) were replaced for a fluted bearing journal. DMFS reinstalled the repaired AGB assembly and test flew the aircraft with no leaks noted and the test flight was found satisfactory.
- 1.4 In July 2006 at engine TSN 580.2 MEAD Aircraft Services incorporated the Pratt & Whitney Canada (P&WC) Service Bulletin (SB) 3426 which introduced a new configuration for the reduction gearbox (RGB) scavenge hardware that does not require accessing the AGB internally.

2.0 Investigation

- 2.1 The power turbine (PT) and reduction gearbox (RGB) could be freely rotated via the propeller shaft. The accessories gearbox (AGB) could not be freely rotated and no continuity was observed between the AGB and the compressor. The compressor could be rotated freely via the 1st stage integrally bladed rotor (IBR).



Service Investigation

Engine / Component Investigation Report

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Report No.: 16SIE00152**S/O: 192478**

2.2 The AGB magnetic chip detector (MCD) poles were bridged with metallic debris (Photo No. 1).



Photo No. 1

2.3 The RGB MCD showed metallic debris and bronze colored metallic particles (Photo No. 2).



Photo No. 2



Service Investigation

Engine / Component Investigation Report

P&WC 1076 (03-04)

Report No.: 16SIE00152**S/O: 192478**

- 2.4 The main oil filter showed metal debris contamination (Photo No. 3).

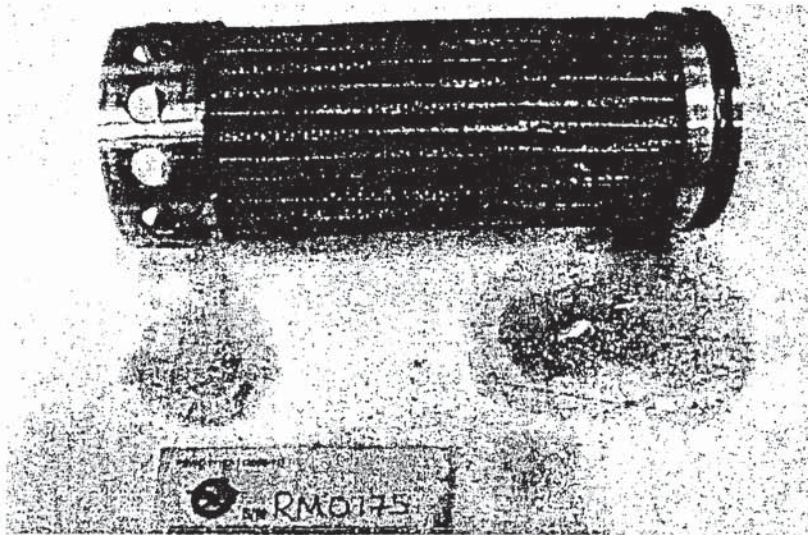


Photo No. 3

- 2.5 The AGB was dirty but showed no major oil leakage (Photo No. 4). The threaded oil nozzle (P/N 3116530-01) was removed (arrow, Photo No. 4) and found fractured (Photo No. 5, shown with the fractured pieces recovered later during disassembly). The AGB drive gearshaft (P/N 3116496-01) bearing journal was observed out of position through the AGB housing (arrow, Photo No. 6). The AGB assembly was removed without having to unlock the spring lock insert.

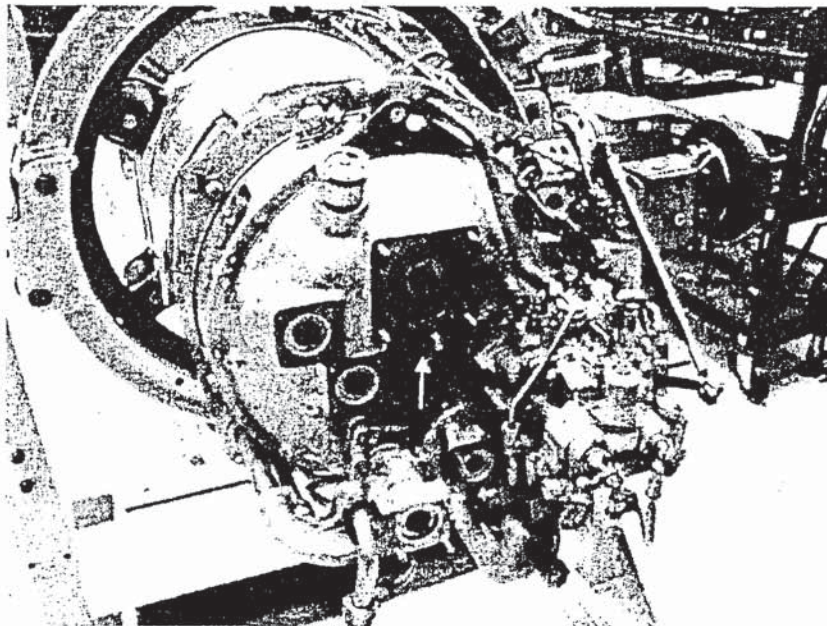


Photo No. 4



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Engine / Component Investigation Report

P&WC 1076 (03-04)

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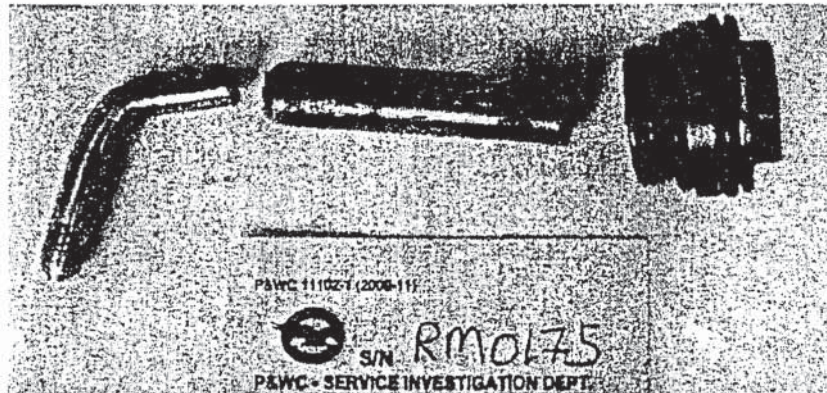


Photo No. 5

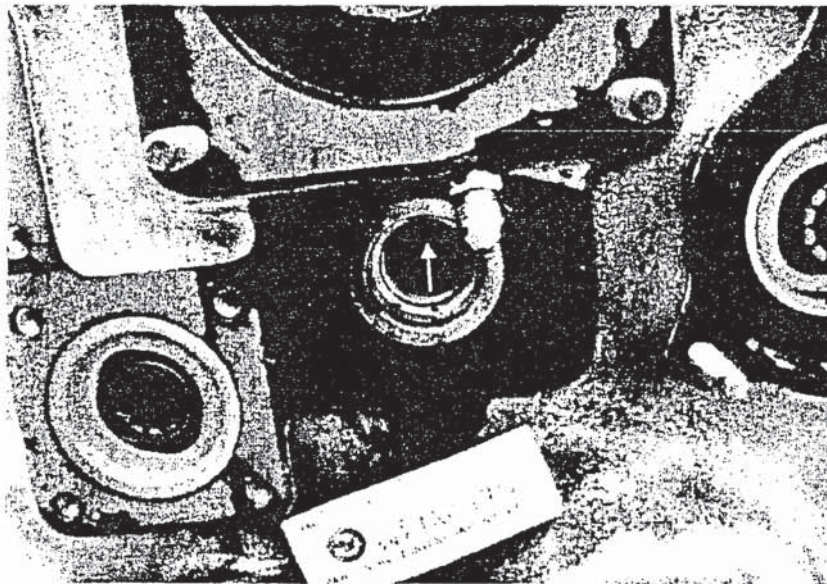


Photo No. 6

- 2.6 The RGB scavenge pump showed no distress and could be rotated by hand.
- 2.7 With the AGB assembly removed metal debris was observed in the main oil tank (circled, Photo No. 7) and the coupling shaft (P/N 3119369-01), which showed a battered surface on the exposed end was observed hanging on the rear hub compressor coupling (P/N 3114832-01) (arrow, Photo No. 7). The exposed end also revealed the splined portion of AGB drive gearshaft fractured inside and still held in place by the retaining ring (arrow, Photo No. 8). The coupling shaft was subsequently removed by hand indicating that it was no longer locked in place (Photo No. 9). The spring lock insert (P/N 313604-01) was fractured with the outer lip battered and circumferential rubbing wear on the rest of its surface (Photo No. 10). The fractured 4 "legs" of the spring lock showed rubbing wear and mechanical damage on the tips (inset) and were found loose inside the shaft (Photo No. 10).



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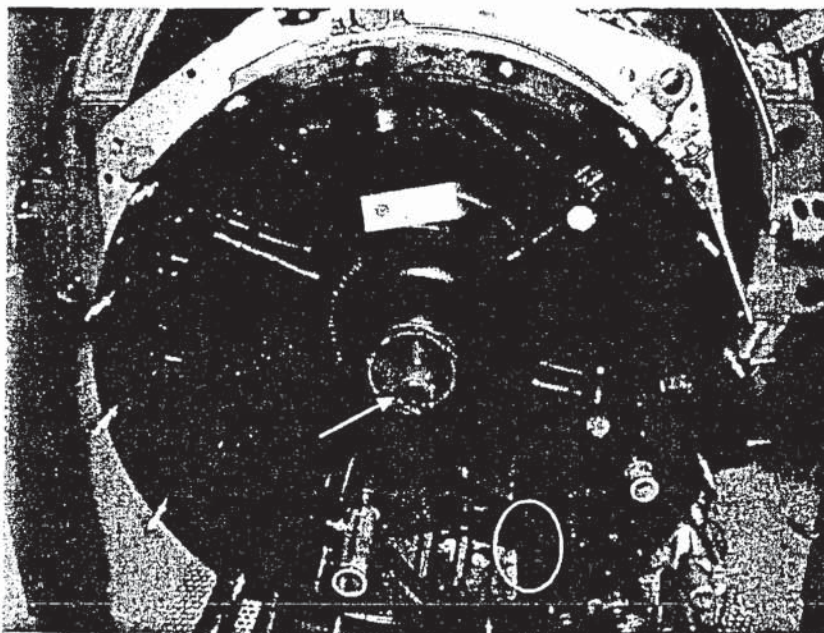


Photo No. 7

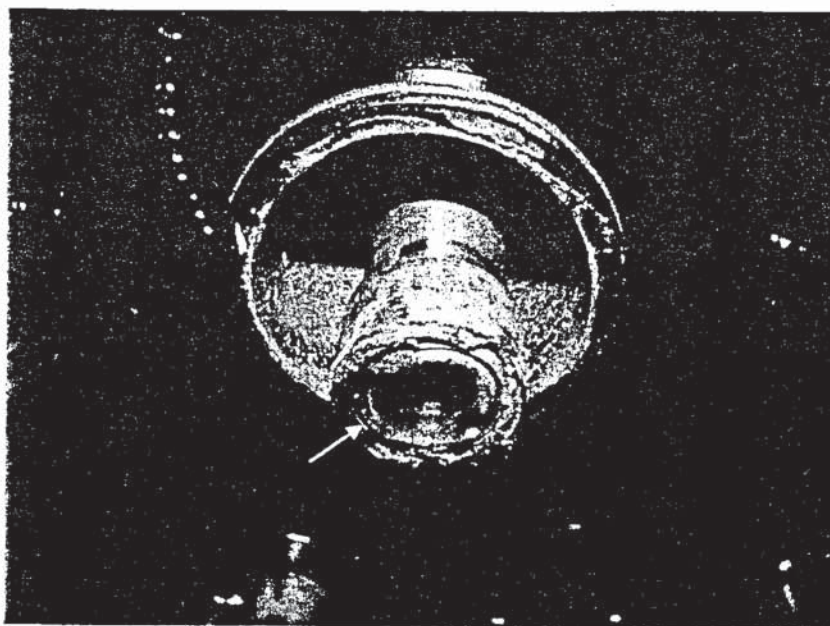


Photo No. 8

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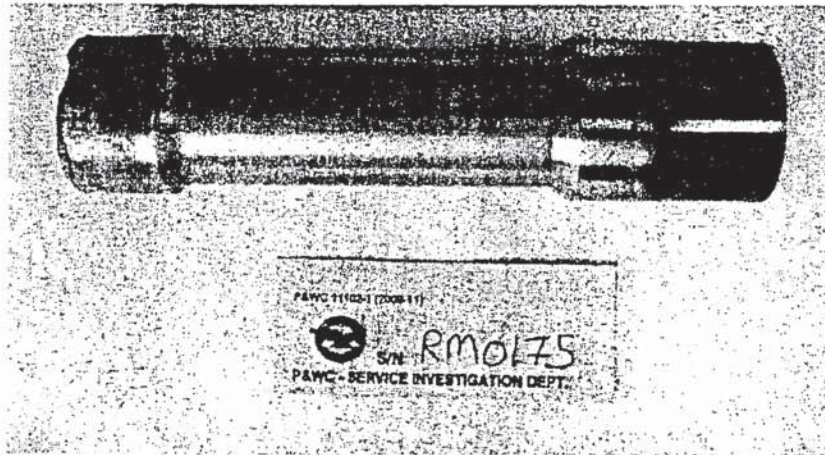


Photo No. 9

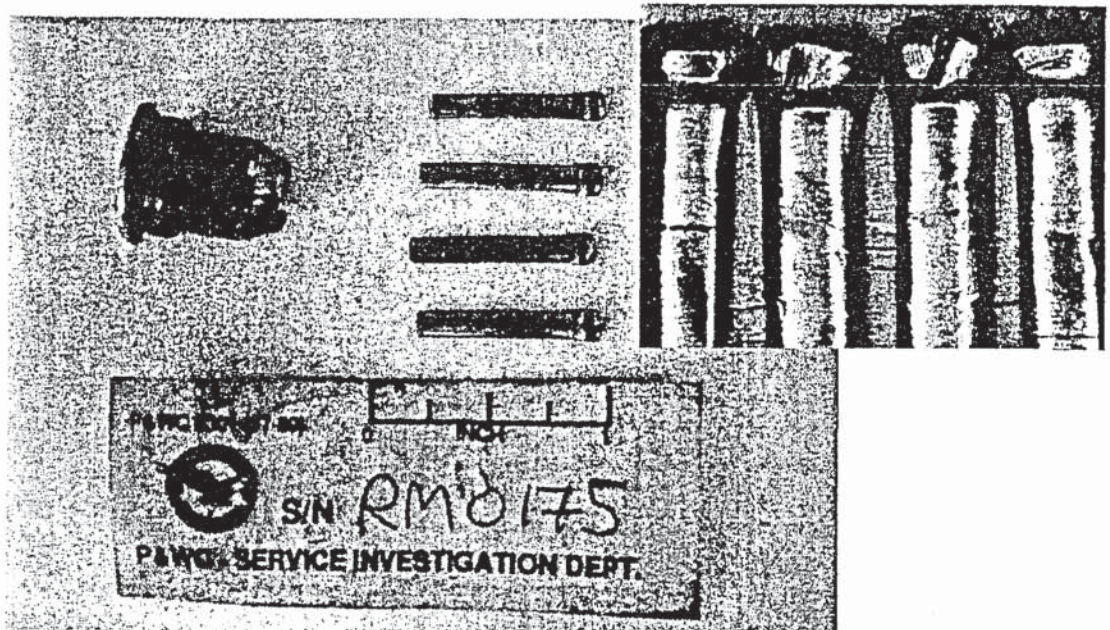


Photo No. 10

- 2.8 The AGB assembly housing as removed showed no distress (Photo No. 11). The main oil pump was removed and could be freely rotated. Disassembly of the main oil pump found no distress. The oil filler tube check ball was found in good condition.



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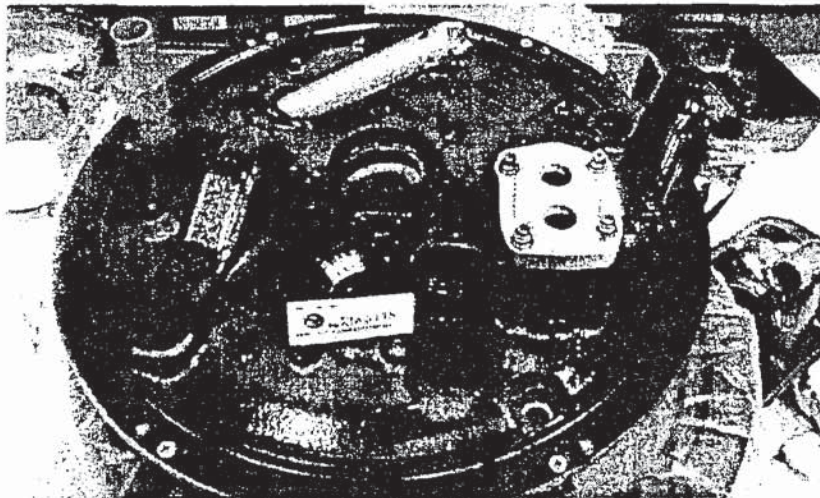


Photo No. 11

- 2.9 The AGB diaphragm was split from the AGB housing revealing metal debris contamination and the distorted remnants of the flanged outer ring of its accessory bearing (P/N 3037278 from records, as P/N and S/N not legible) at diaphragm boss No. 3 (arrow, Photo Nos. 12 and 13). The triple key washer was in place with the tabs properly secured. The bearing seat was also damaged and cracked in line with the retaining bolt holes (arrows), resulting in the displacement of the helicoil inserts during the bearing removal (Photo No. 14). The remaining accessories roller bearings showed no distress. The external scavenge pump gearshaft drive and the oil pump drive gearshaft showed no primary distress only secondary damages from overrunning metallic debris (Photo No. 12). The flanged oil transfer tube was found unobstructed (red arrow, Photo No. 12).

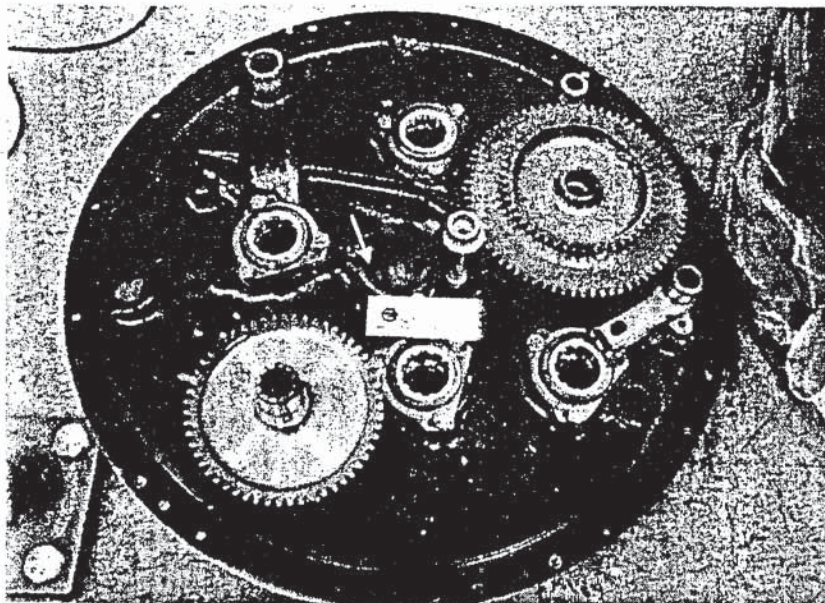


Photo No. 12



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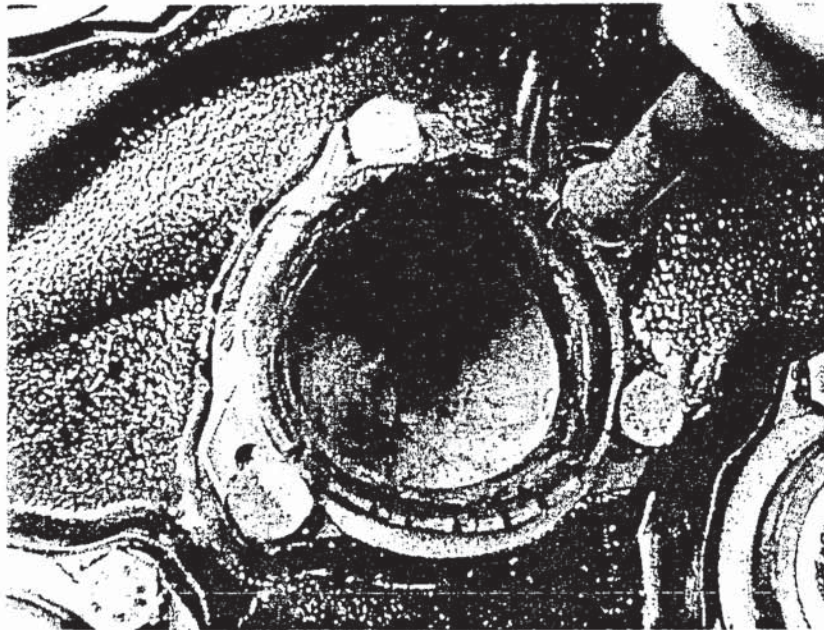


Photo No. 13

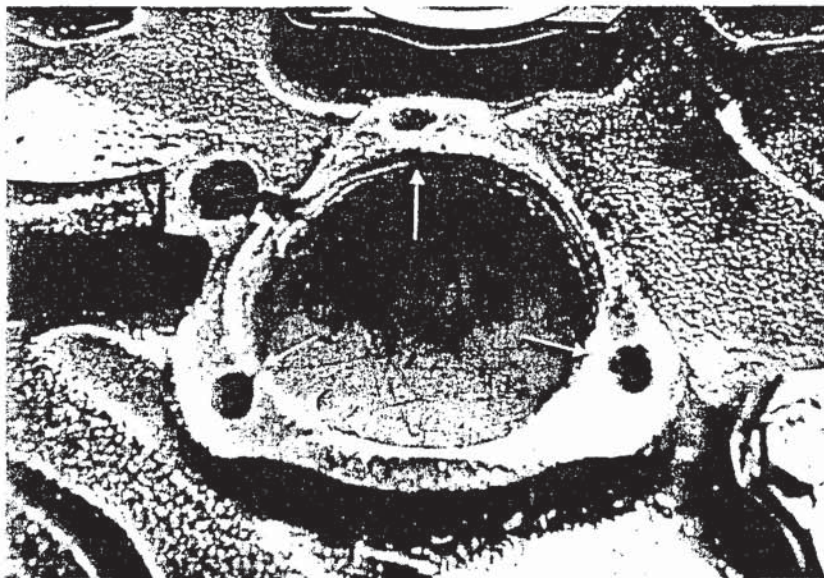


Photo No. 14

- 2.10 The AGB housing showed metal debris contamination (Photo No. 15). The gearshafts except the AGB drive gearshaft were removed. The starter generator gearshaft drive and an accessory gearshaft drive showed secondary mechanical damages (Photo No. 16). The centrifugal breather impeller showed material loss from the outer circumference from contact with the AGB drive gearshaft teeth (Photo No. 17). The fuel control drive gearshaft and second accessory gearshaft drive showed no significant damages.



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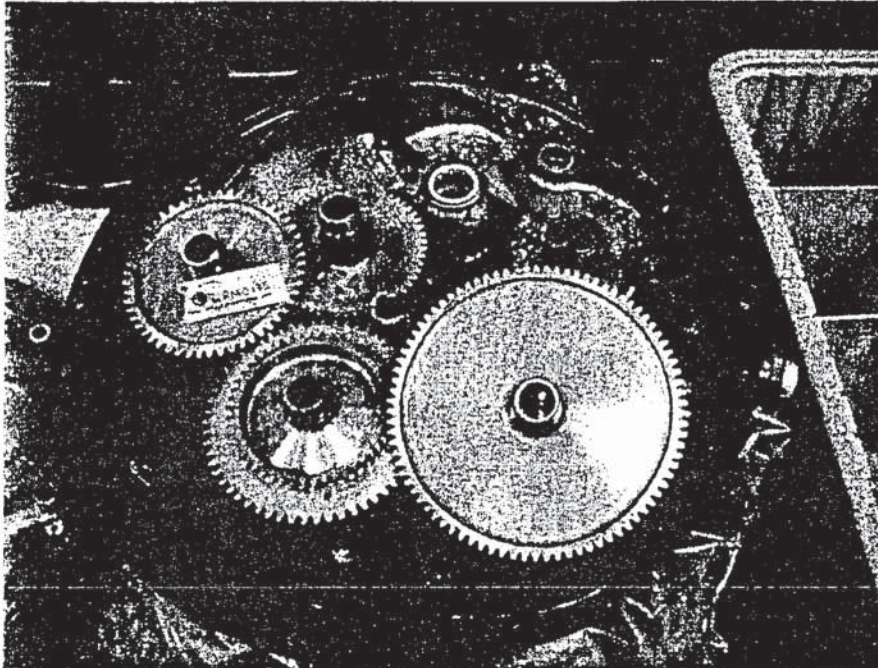


Photo No. 15

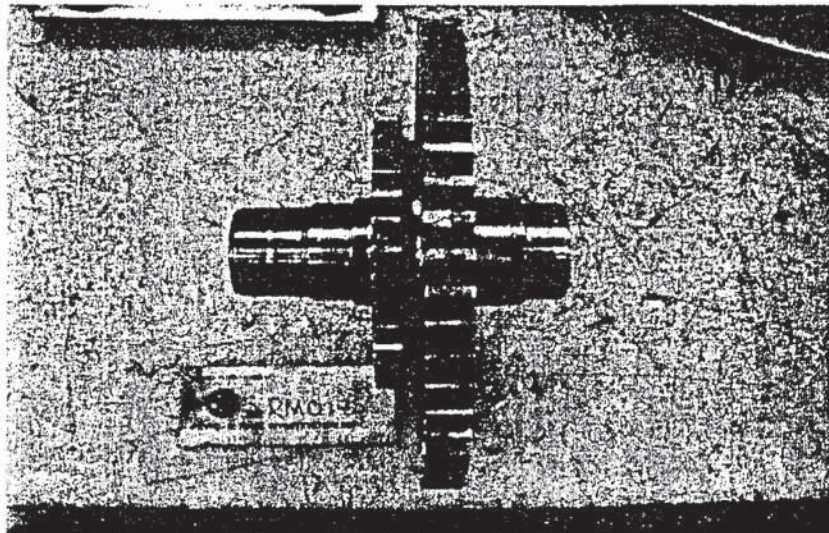


Photo No. 16



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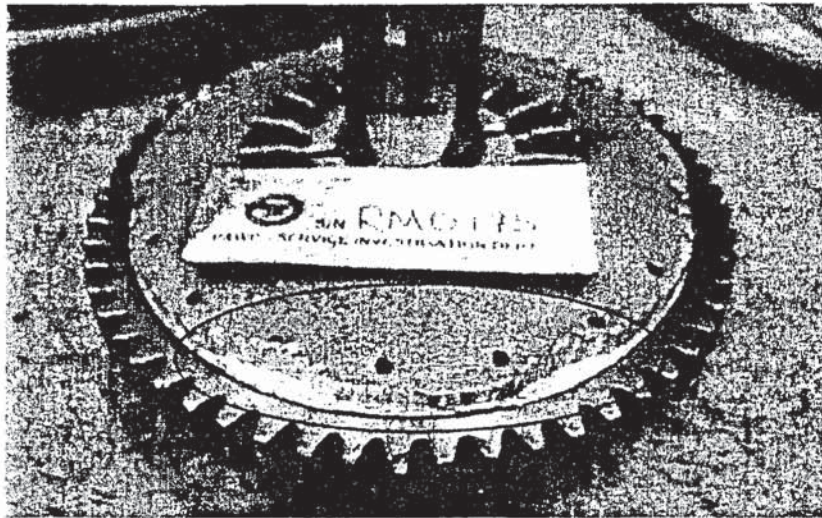


Photo No. 17

- 2.11 With the gearshaft removed, the AGB housing revealed the battered and bent front oil nozzle section from the fractured threaded oil nozzle (arrow, Photo No. 18). The fractured AGB drive gearshaft remnants (Photo No. 18 and 19) showed offset gear teeth wear (shaft moved towards the AGB housing side) and orbiting resulting in significant material loss (red arrow Photo No. 20). The AGB drive gear teeth (Photo No. 20) showed no indication of prior tooth contact pattern wear on either side of the intact tooth remnants (Photo No. 21). Both bearing journals of the AGB drive gearshaft also showed orbiting and offset wear resulting in material loss of the journals (Photo No. 19). The journals, based on the wear, appear to have moved toward the housing side relative the rollers fixed locations (dashed arrows, Photo No. 20).

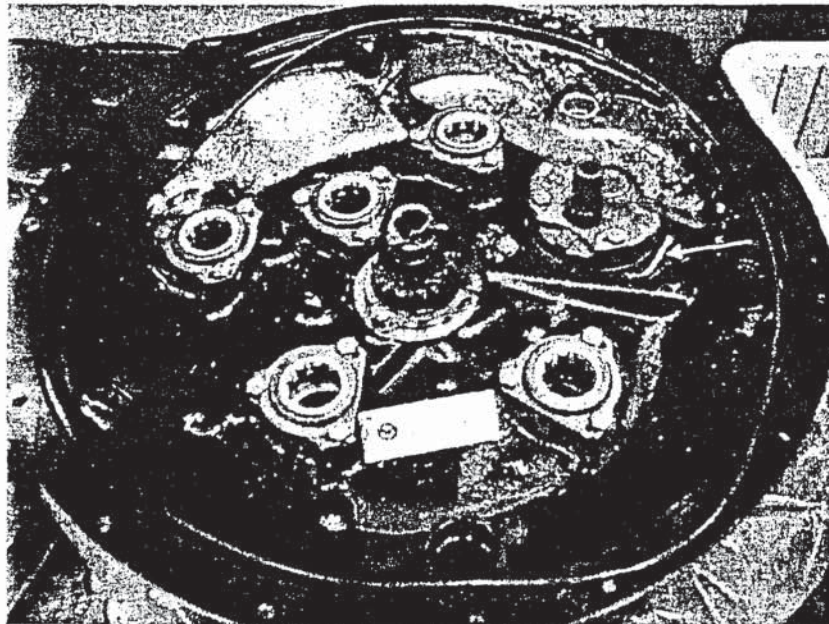


Photo No. 18



Service Investigation

Engine / Component Investigation Report

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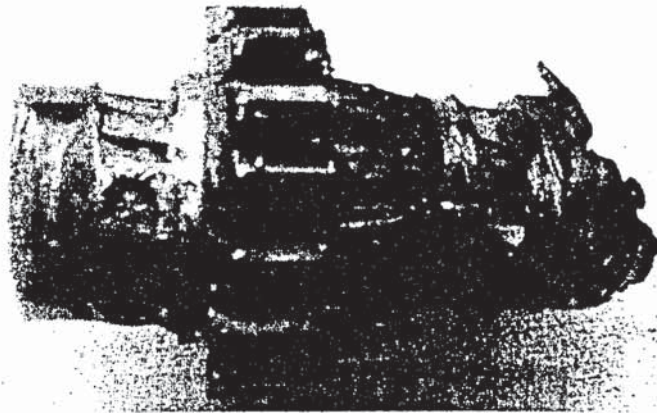


Photo No. 19

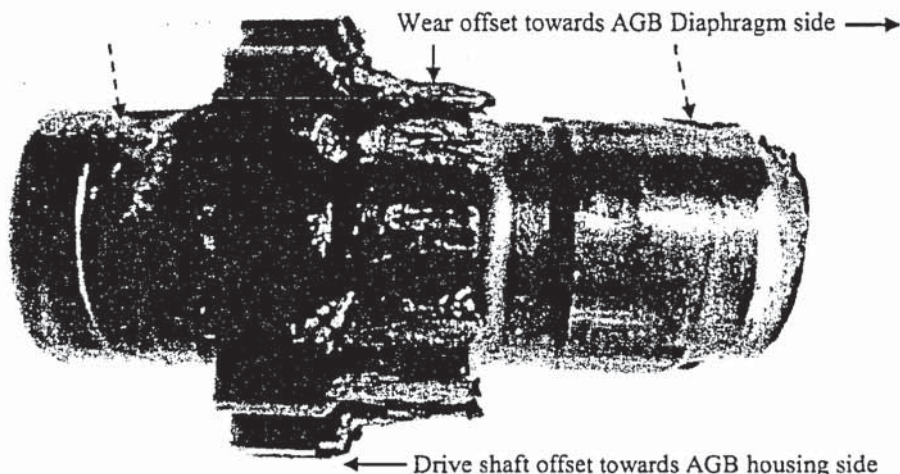


Photo No. 20



Photo No. 21



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- 2.12 Removal of the AGB drive gearshaft revealed the distorted remnants of the flanged outer ring of its accessory bearing (P/N 3037278 from records, as P/N and S/N not legible) at housing boss No. 3 (Photo No. 21). The flat spacer, and triple key washer was in place with the tabs properly secured. The bearing support sleeve seat showed rubbing damage (Photo Nos. 22 and 23). The remaining accessories bearings showed no distress (Photo No. 23).

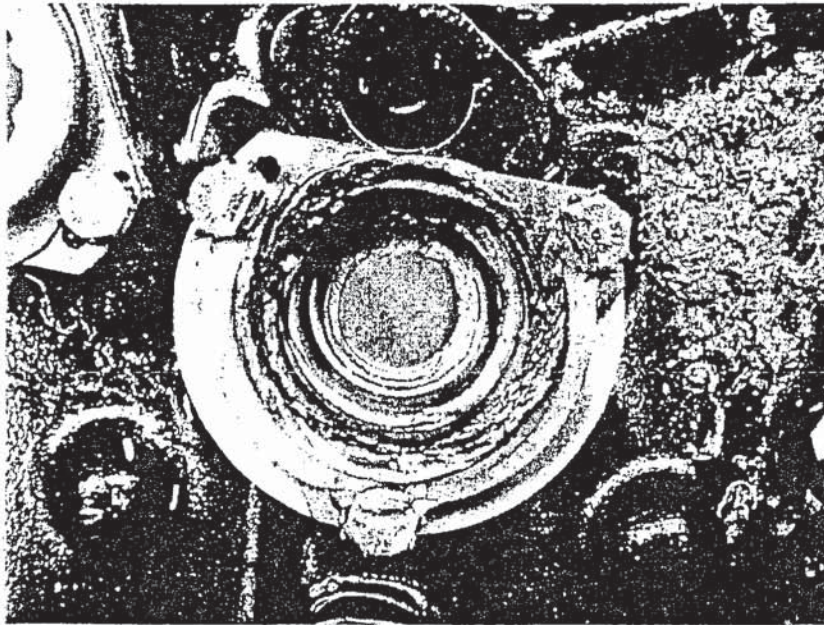


Photo No. 22

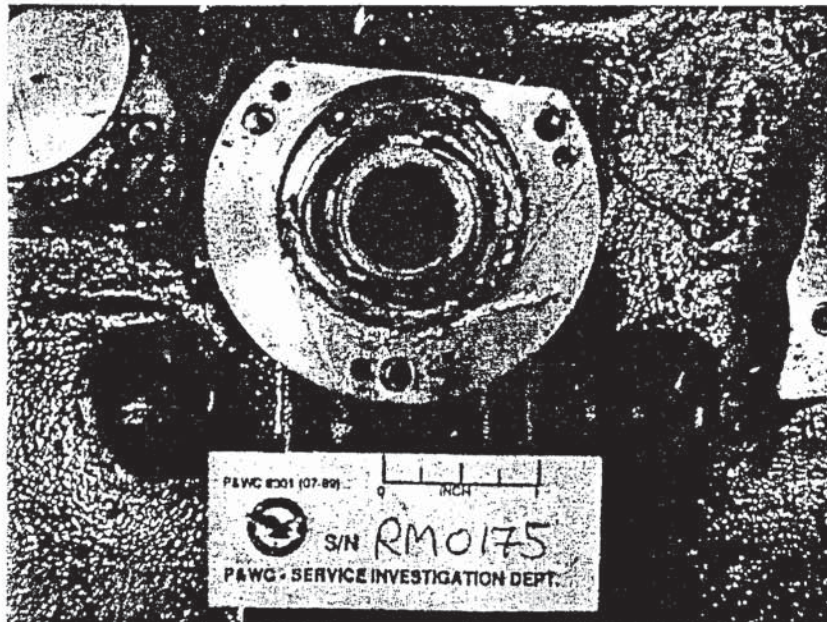


Photo No. 23



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- 2.13 The engine was split at the "C" flange with no distress observed on the compressor turbine (CT) and PT blades (Photo No. 24). No distress was observed with the inter turbine temperature system.

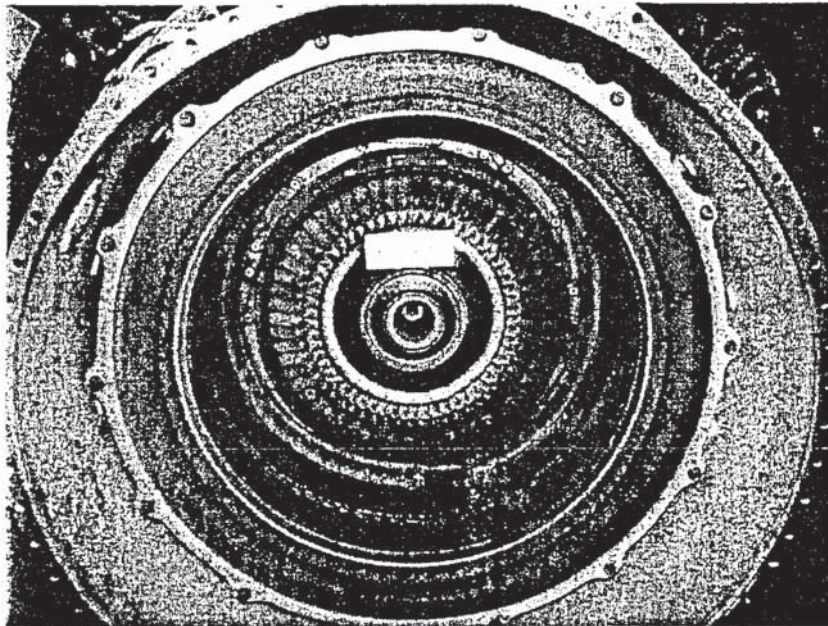


Photo No. 24

- 2.14 The compressor was accessed to remove the compressor rotor assembly with the rear hub coupling sleeve (arrow) still inside the compressor rear hub coupling (Photo No. 25). The compressor rear hub coupling was found to have slightly rotated within the compressor rotor shaft based on the offset view of the shear pin used to retain the two parts (circled, Photo No. 26). The splines on the compressor rear hub coupling showed two distinct contact patterns (Photo No. 27). The contact pattern which showed normal contact wear was observed to begin closer towards the compressor rotor end than second contact pattern. The second contact pattern, which showed excessive contact wear and heat discoloration, was located approximately 1/8" more rearward of the start of the first contact pattern. The pin ball lock in the compressor rear hub coupling was found with a concave depression worn into the tip (arrow, Photo No. 28). The coupling sleeve, spring expander, pin ball lock were removed from the compressor rear hub coupling. For comparison the worn pin ball lock (on left) is placed next to an acceptable in-service pin ball lock (on right) showing the extent of the wear (Photo No. 29). The coupling sleeve showed mechanical impressions of spline teeth around the periphery of the outside flange (Photo No. 30). The locking feature of the spring expander had fractured and the inner diameter showed polishing / rubbing from expander leg movement (Photo No. 31). Examination of the coupling shaft (P/N 3119369-01) splines showed wear only on one side of the splines (red arrows) except for one spline which showed a localized worn region near the front end of the spline that extended to both its sides (circled, Photo No. 32). The wear was similar to the wear observed on the pin ball lock.



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Photo No. 25

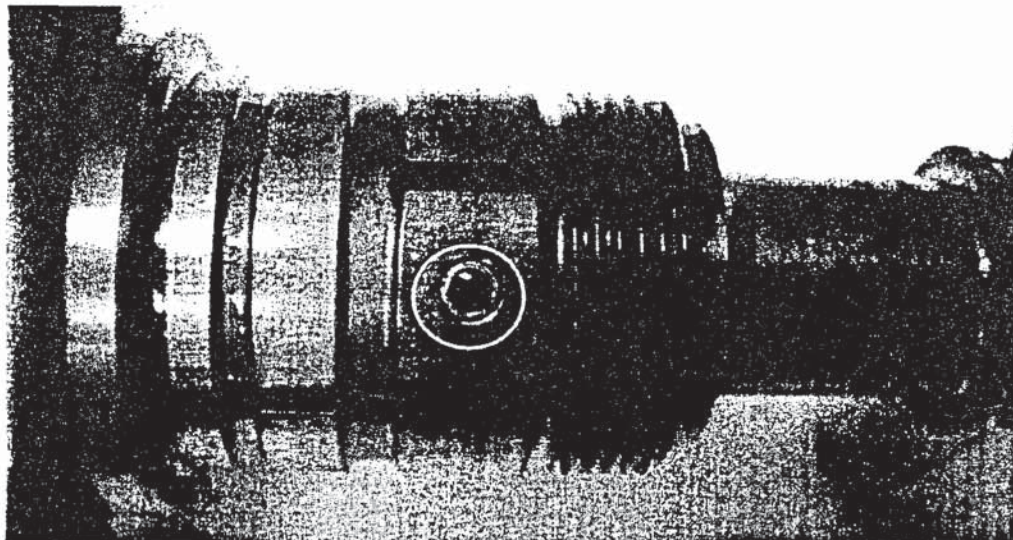


Photo No. 26



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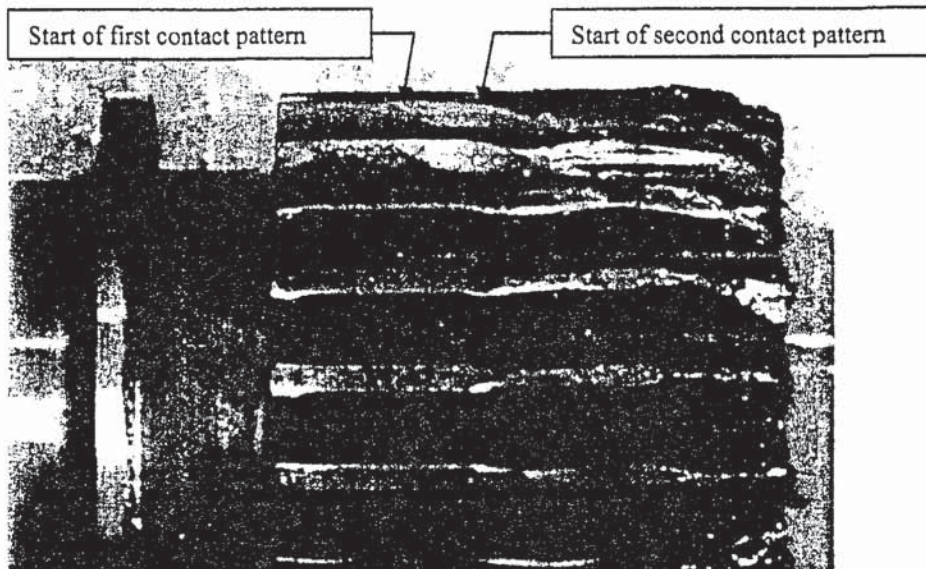


Photo No. 27

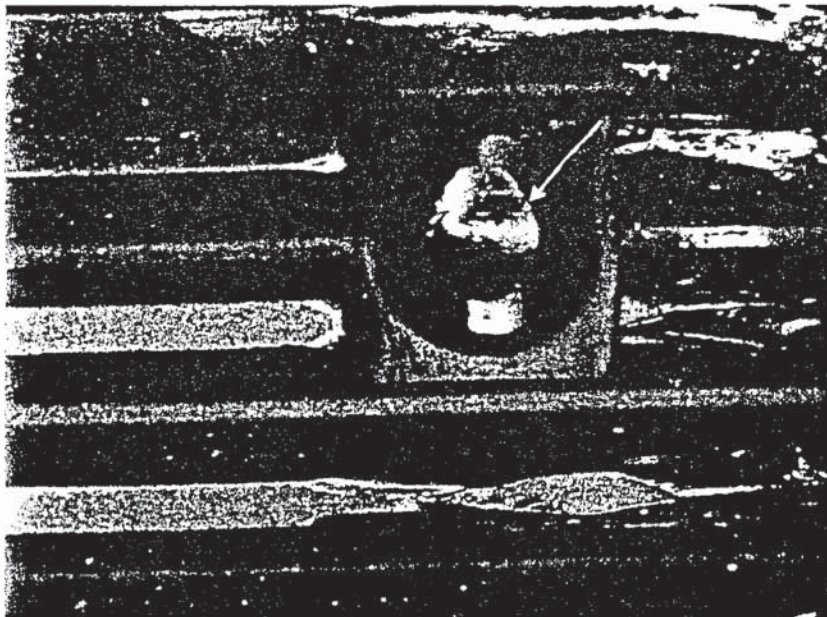


Photo No. 28

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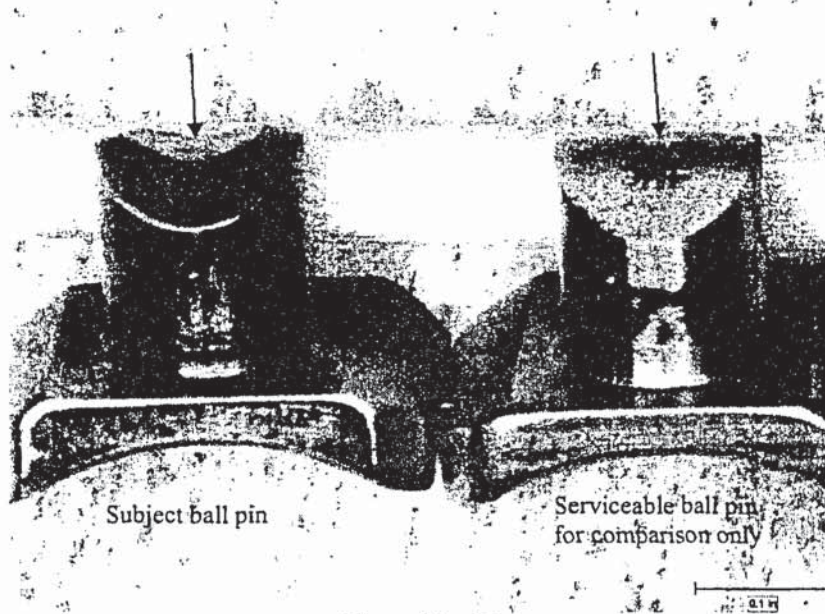


Photo No. 29

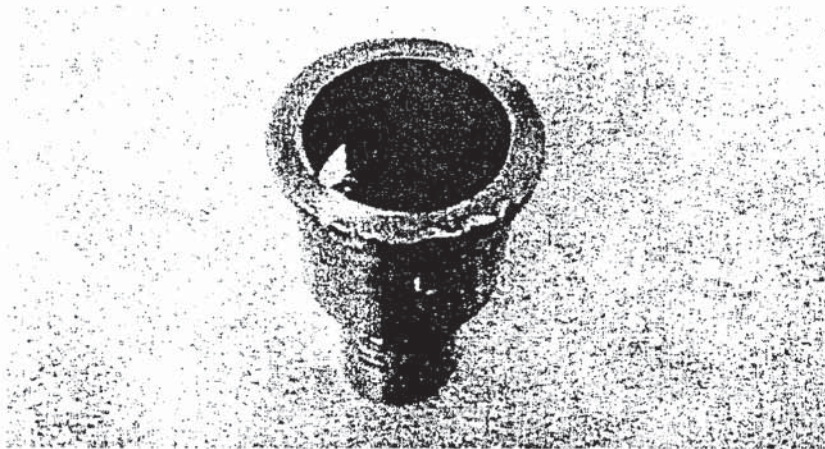


Photo No. 30



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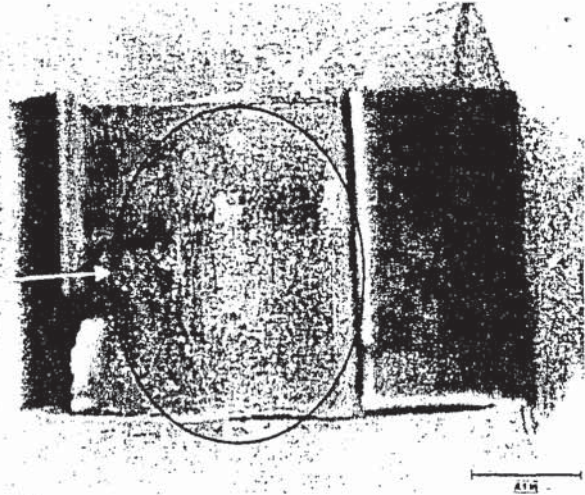
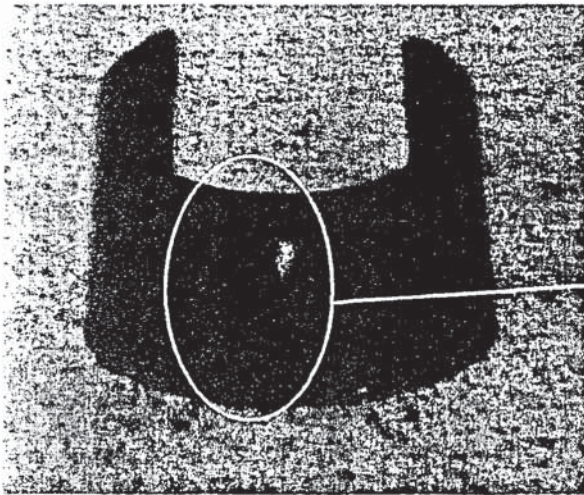
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Photo No. 31

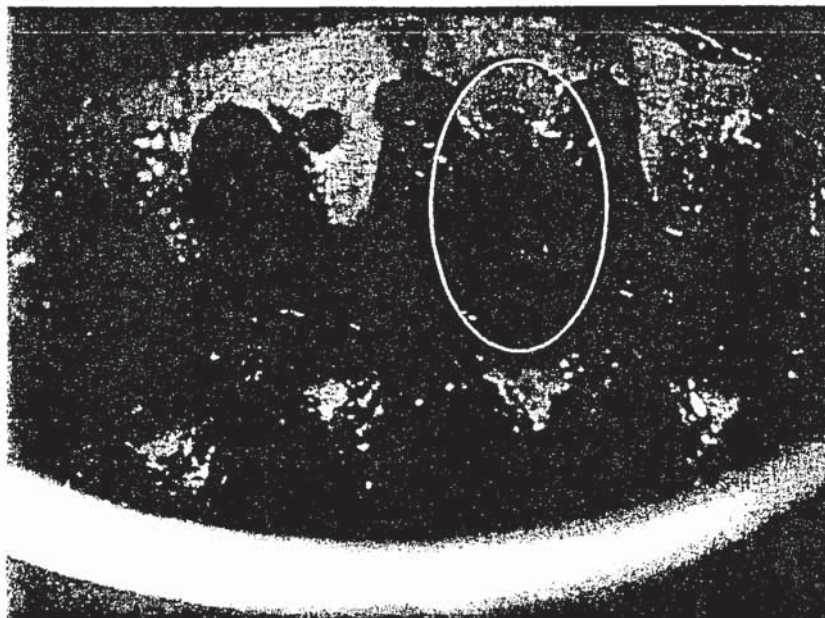


Photo No. 32

- 2.15 The RGB was removed and disassembled revealing the first stage carrier flange at the location of the planet gears "X" and "Z" to be significantly heat tinted (Photo No. 33). All three first stage planet gears could be rotated. The planet gear carrier bearing journal showed no distress. The planet gear carrier was disassembled, but due to distress of the "X" and "Z" planet gears' bushings they could not be removed (Photo Nos. 34 and 35). Removal of the oil strainers, showed the "X" and "Z" planet gears were discolored with carbonised oil, showed no evidence of any oil wetness (Photo No. 35). The second stage carrier assembly showed no distress.



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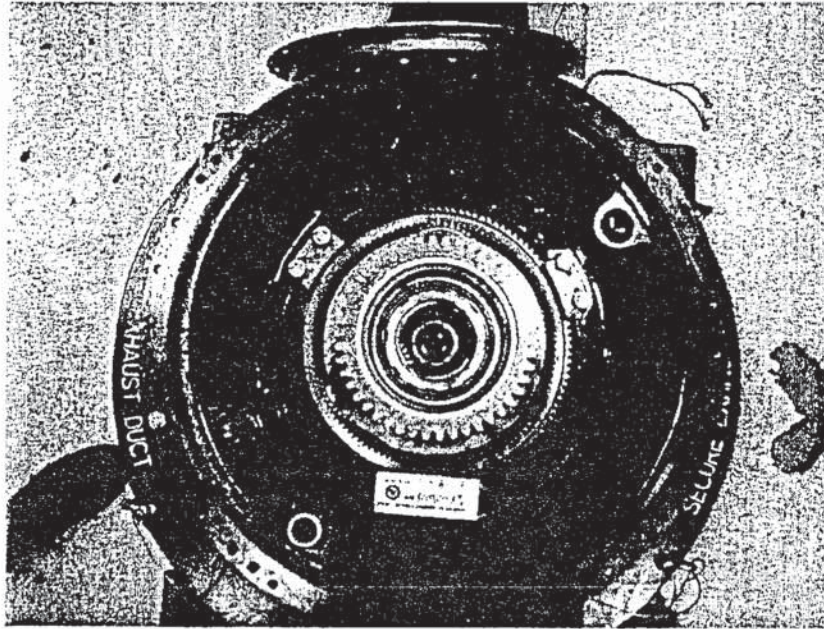


Photo No. 33

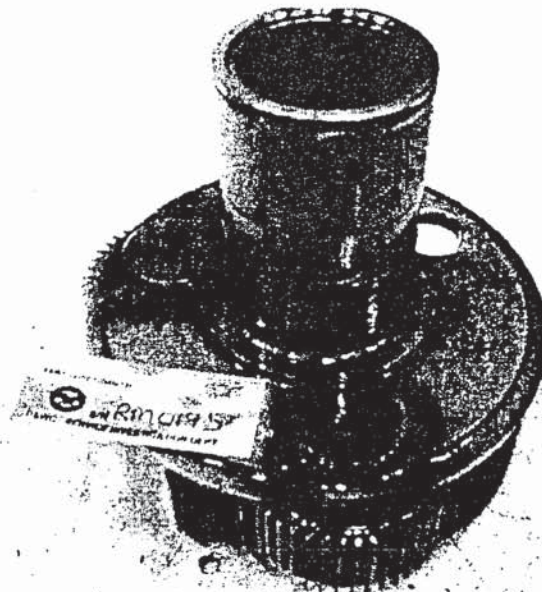


Photo No. 34



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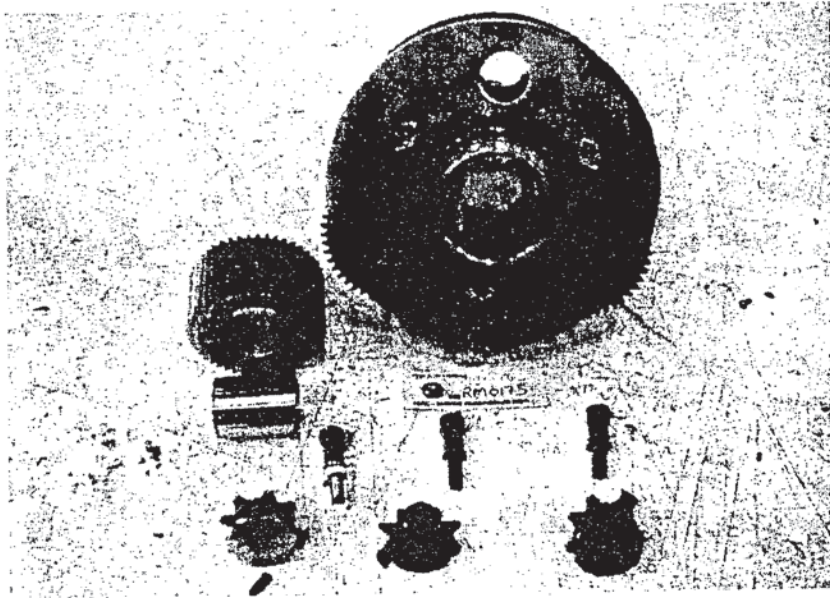
Report No.: 16SIE00152**S/O: 192478**

Photo No. 35

- 2.16 From the debris recovered in the AGB front housing 13 rollers, pieces of bearing cage crossbars and side rails were found and (Photo No. 36). It could not be determined from which of the two accessories bearings (10 rollers each) the rollers and cage pieces had originated from. Due to the damages on all the recovered rollers and cage cross bars it was not possible to characterise their condition prior to the damages (Photo Nos. 37 and 38). The cage side bars that could be characterised showed significant roller end face contact wear resulting in wear ridges corresponding to the outside diameter of the rollers (arrows, Photo No. 39). Although many of the side rails fracture surfaces showed significant rubbing obliterating the original fracture surface (Photo No. 40) some still showed evidence of river lines (arrows) and a flat region indicative of fatigue (Photo No. 41).

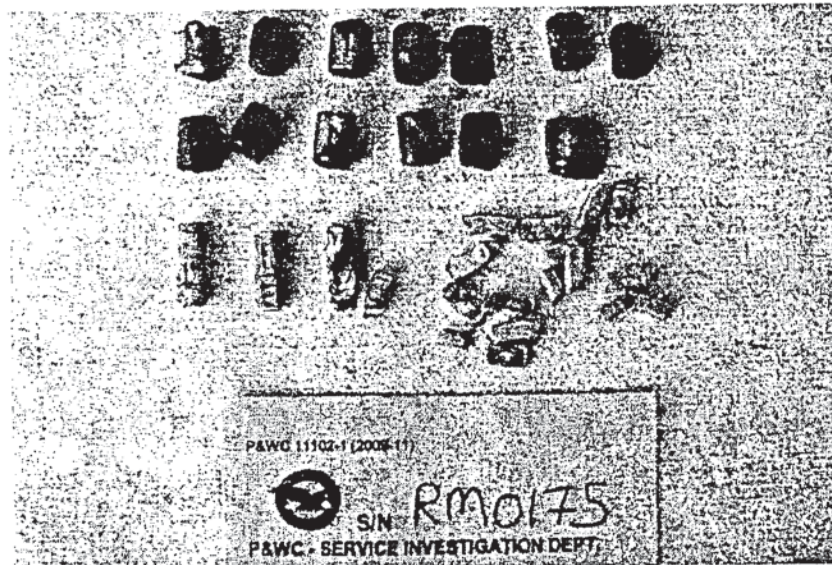


Photo No. 36



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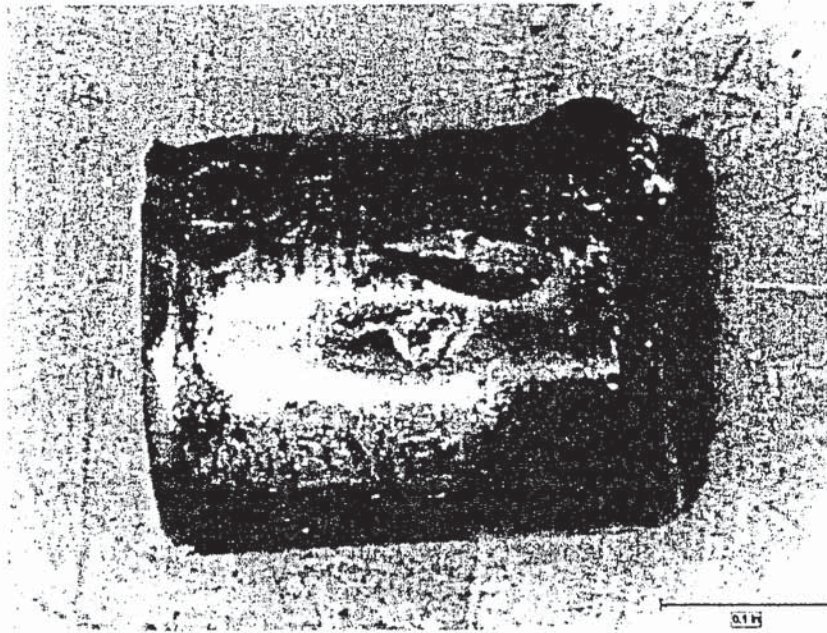


Photo No. 37



Photo No. 38



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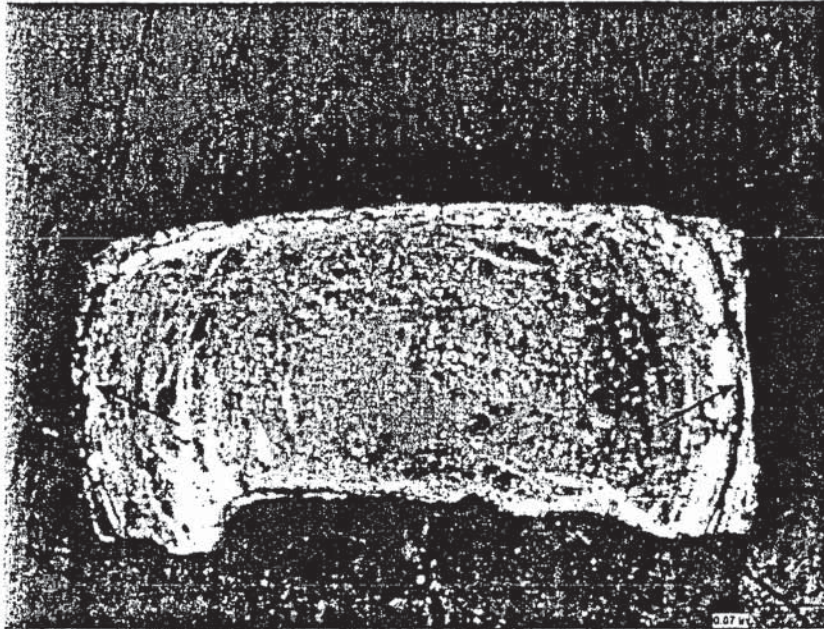


Photo No. 39

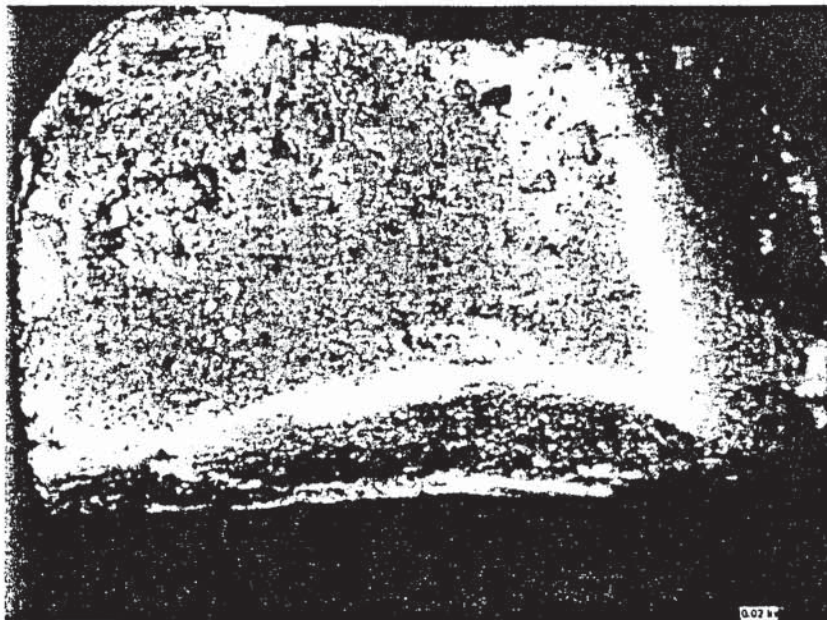


Photo No. 40



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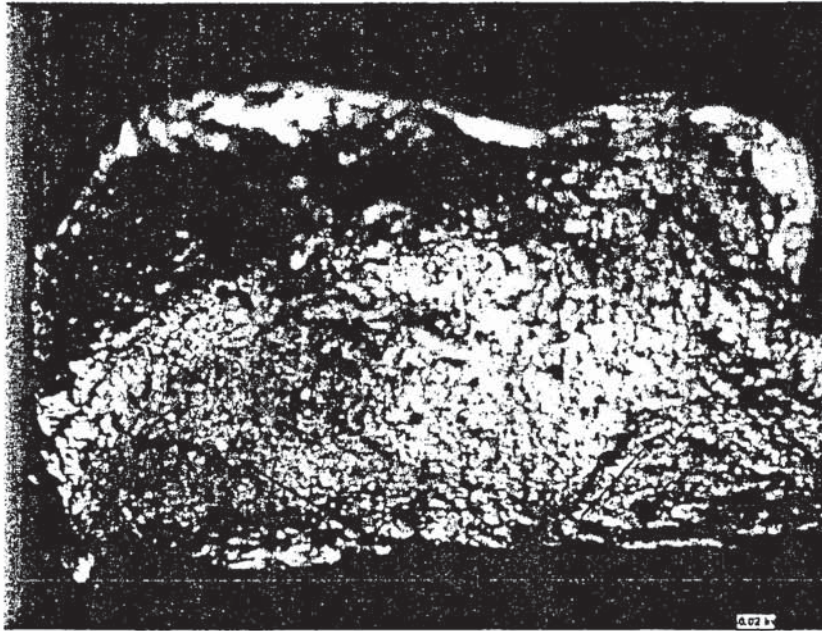


Photo No. 41

- 2.17 The fracture surfaces of the oil jet nozzle assembly were examined and were both found to be indicative of overload fractures (Photo Nos. 42 and 43).

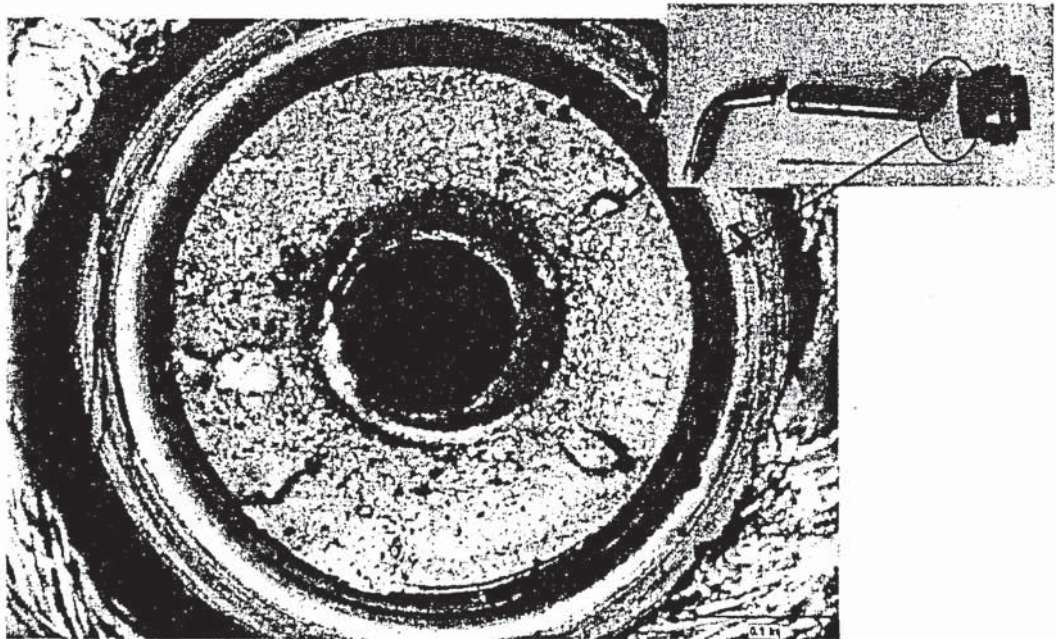


Photo No. 42



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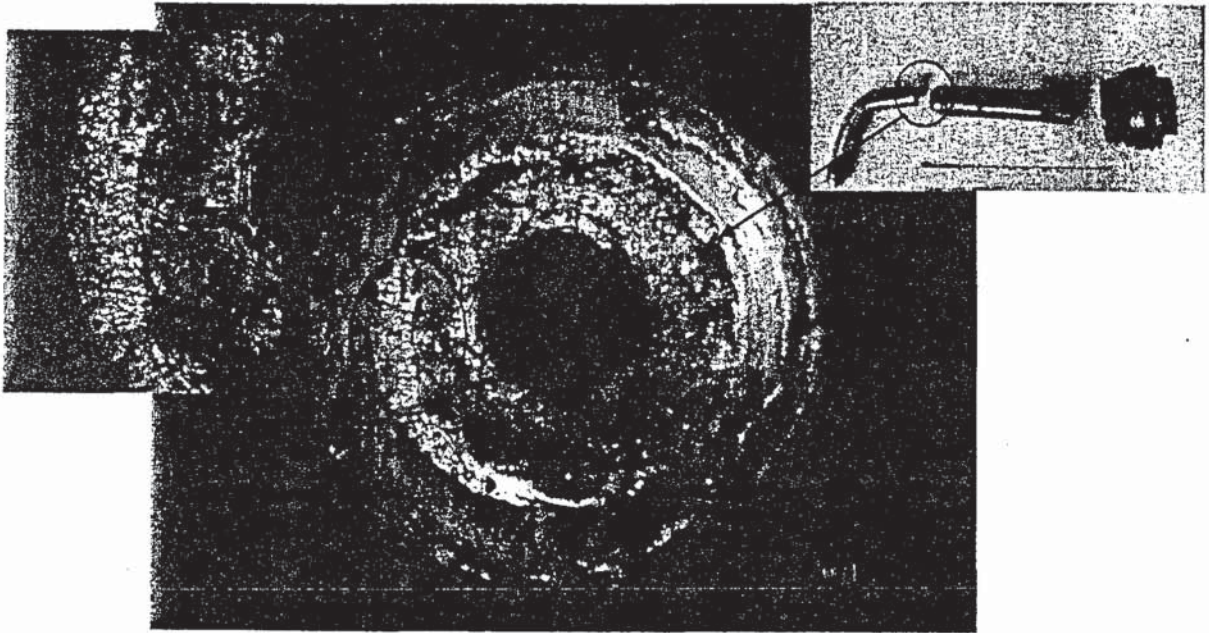


Photo No. 43

- 2.18 The fracture surfaces of the AGB gear shaft drive were significantly battered (Photo No. 44) resulting in only a small fracture region on the splined end (circled, Photo No. 44) that could be examined (circled, Photo No. 44). The fracture surface which slanted towards 45° was indicative of shear overload (Photo No. 45).

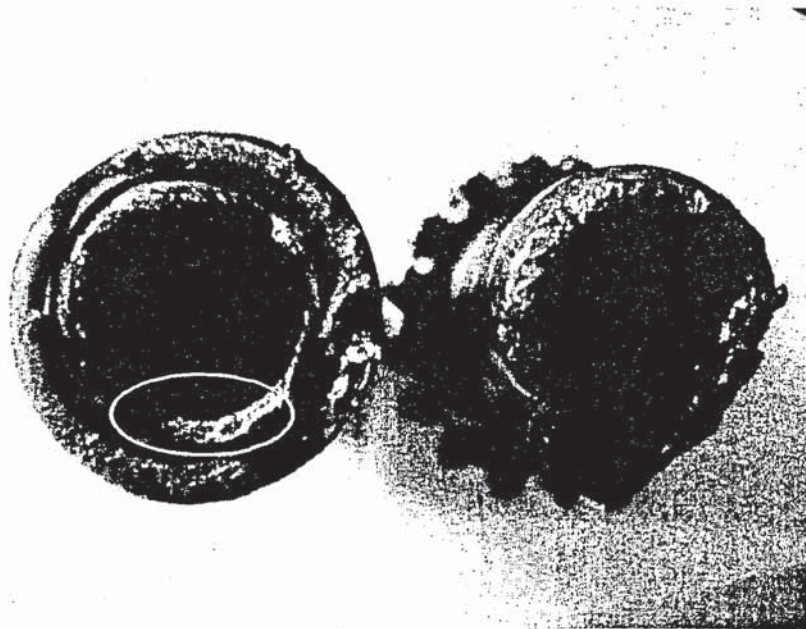


Photo No. 44



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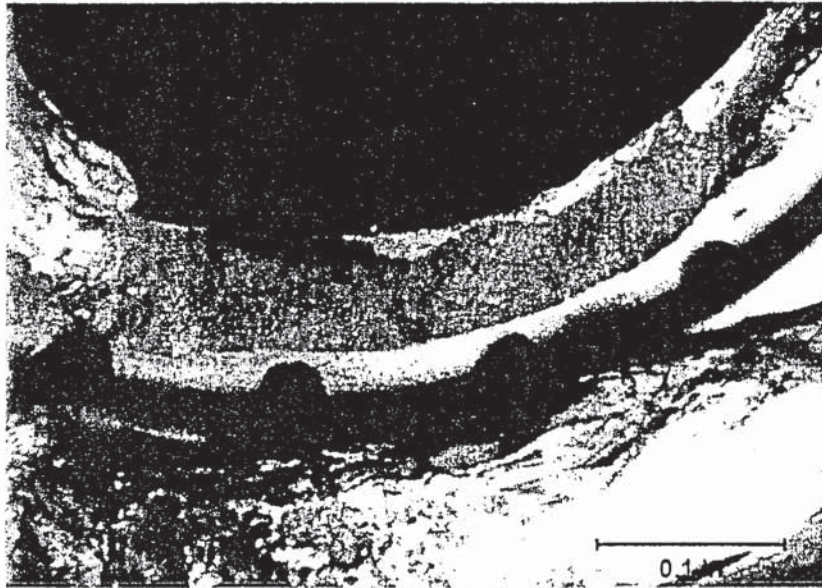


Photo No. 45

- 2.19 The spring lock insert fracture surfaces showed significant rubbing damages, however in small undamaged regions the original fracture surface could still be observed (Photo No. 46). The fracture surface morphology of these regions showed flat surfaces with, river lines and beach marks indicative of fatigue crack propagation (Photo No. 47). The fracture surfaces on the spring lock legs showed similar features (Photo No. 48).

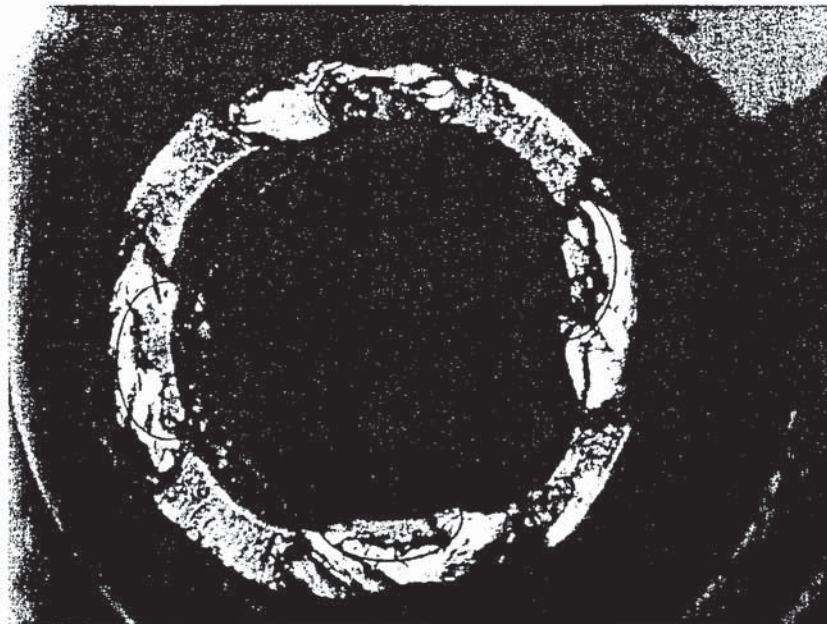


Photo No. 46



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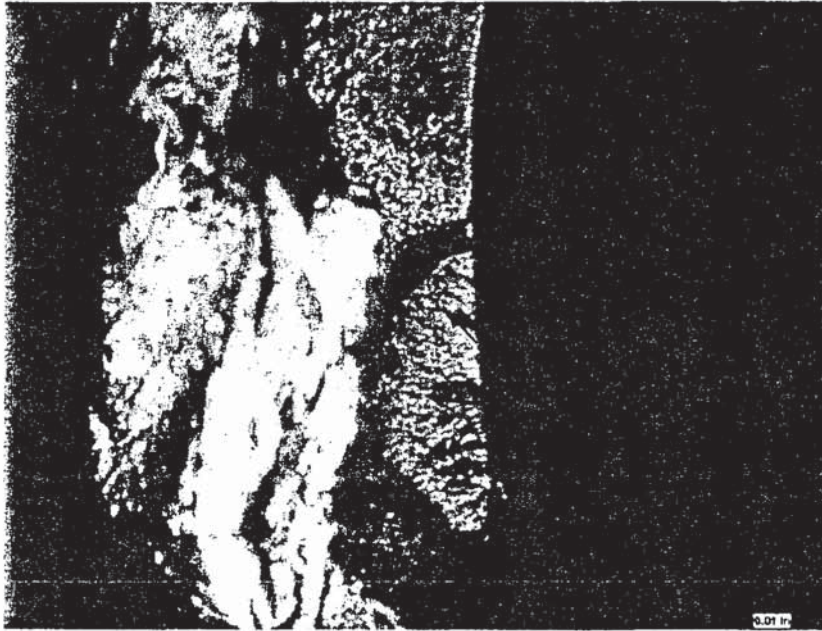


Photo No. 47

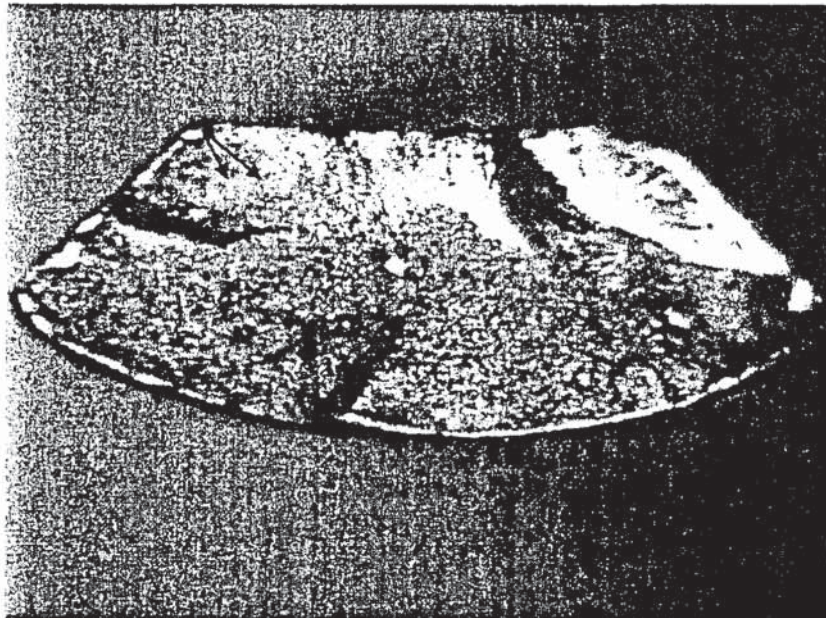


Photo No. 48



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- 3.1 The location of the wear on the coupling shaft spline caused by contact with the pin ball lock indicates that the coupling shaft was not fully seated on the rear hub compressor coupling but was pushed back towards the AGB housing. This is further supported by the orbiting damages observed and by the two sets of contact pattern wear found on the rear hub compressor coupling splines that indicates the latest contact pattern (based on the heat discoloration and wear) was closer to the end of the splines than the first contact pattern which was more towards the compressor rotor, therefore positioning the coupling shaft assembly more towards the AGB housing, than in the expected normal position. In operation this would have resulted in the AGB gearshaft coupling teeth contact with the starter / generator gearshaft drive to be offset with the contact on the coupling gear teeth being more towards the splined end. This was further validated by the absence of any residual contact mark on the remaining teeth section that would have been expected if both gears had been contacting in the proper location from the beginning. Similarly both accessories bearings showed no rolling contact paths in the expected location on the gearshaft journals (which being new had no previous rolling path witness marks). Rather both contact paths were observed to have been offset in the same direction closer towards the spline end of the gear shaft indicating the AGB drive gearshaft was positioned more towards the AGB housing. Also no spalling wear was observed on the AGB gearshaft journals which would have indicated a progressive bearing distress. The significant roller end wear observed on the cage pocket fragments also suggest that the bearing rollers were side loading the cage. Side loading the cage can be caused by excessive axial loading when the journals shoulders are butted against the bearing shoulder as the gearshaft and coupling assembly were operating out of position. It was noted that both components have shifted together as the recovered fractured gearshift drive section was still properly retained in the coupling shaft.
- 3.2 The offset loading between the AGB gearshaft drive and starter / generator gearshaft drive and the accessories bearings eventually resulted in the distress of the bearings and gear teeth until likely a momentarily jamming of the gears resulted in the shearing of the compressor rear hub coupling retaining shear pin and the fracture of the AGB drive gearshaft in shear overload. It is believed that the overload fractures of the oil jet nozzle also occurred at this moment.
- 3.3 The fracture by fatigue of the insert spring lock legs is consistent with vibrations likely induced during operation with the spring lock insert not having been fully seated. This is further supported by the rubbing wear locations by the legs on the inside surface of the spring expander.



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4.0 Conclusions

4.1 The damages observed on the distressed AGB components are consistent with the AGB gearshaft drive and coupling shaft having run towards the AGB housing and in a position offset. This is believed to have been caused by the AGB coupling shaft and the rear hub compressor coupling not being properly locked together at the proper axial position, pushing the coupling shaft assembly towards the AGB housing. The subsequent fracture of the AGB coupling drive caused the loss of mechanical continuity between the AGB and the compressor which then resulted in a loss of drive to the fuel control unit, main oil pump and RGB scavenge pump. This would be consistent with reported loss of NG and ITT as the engine shutdown due to a lack of fuel. 2.19

4.2 The fracture of the AGB gearshaft drive, oil jet nozzle and spring lock insert were secondary.

4.3 The RGB first stage planet gears "X" and "Z" distress was secondary due to a loss in oil pressure lubrication to the planet gear bushings when the main oil pump drive was lost. 2.15

LE: RB 15 June 2016

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